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ATARI USER

Vol. 2 No. 10 February 1987 £1

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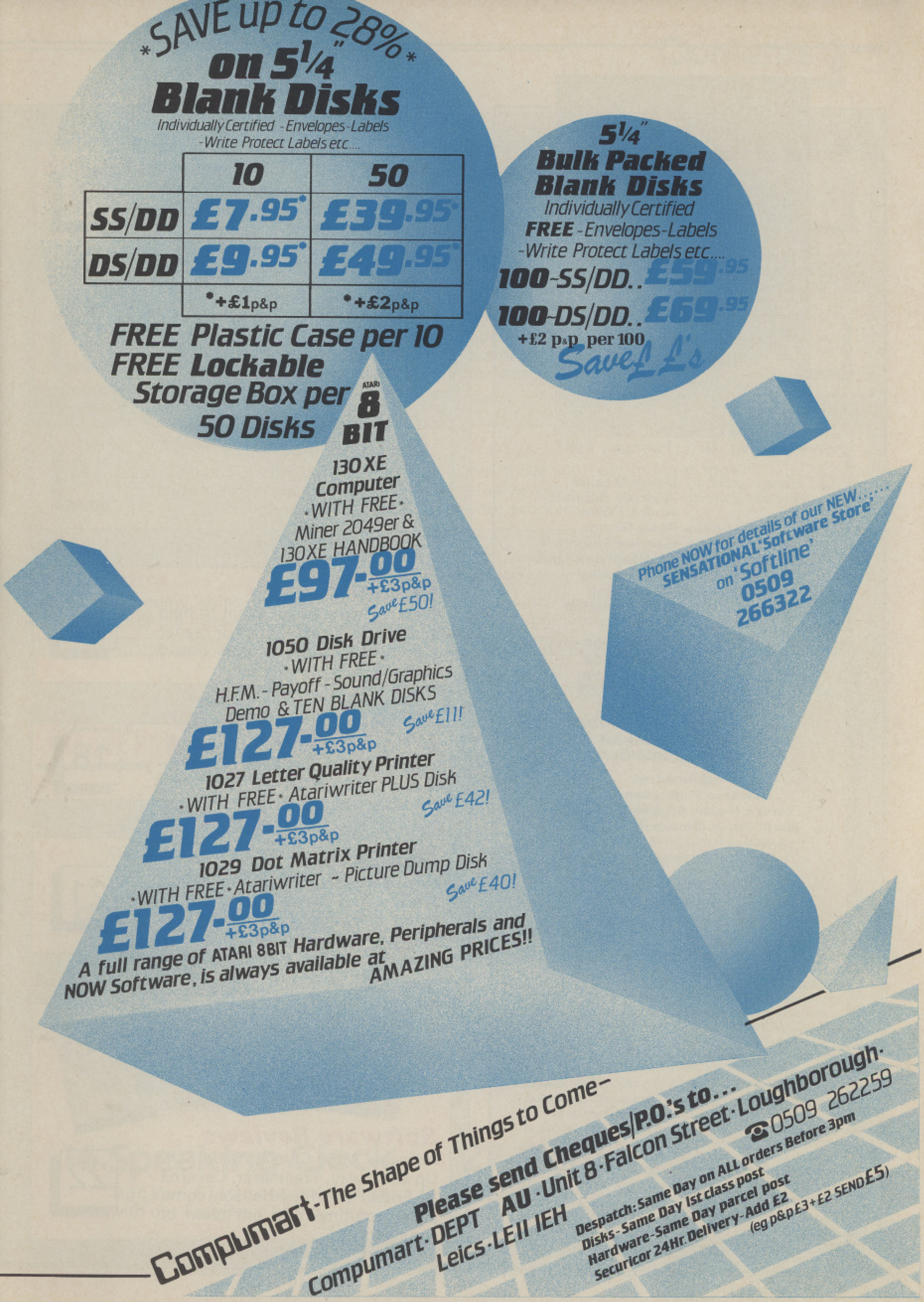
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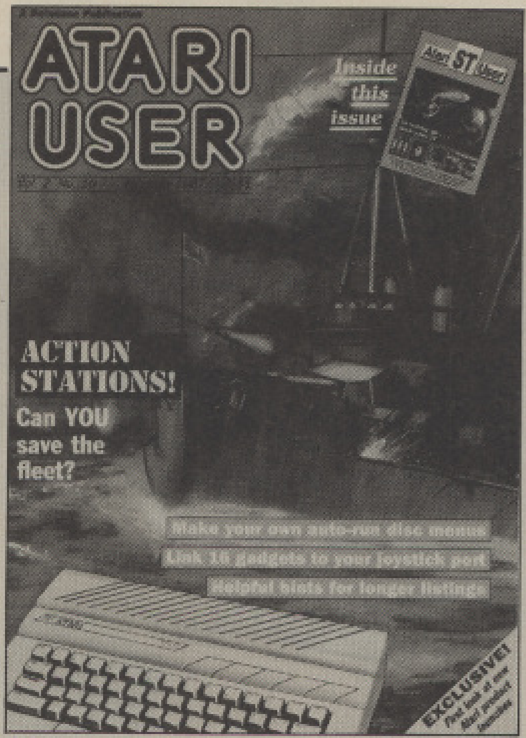
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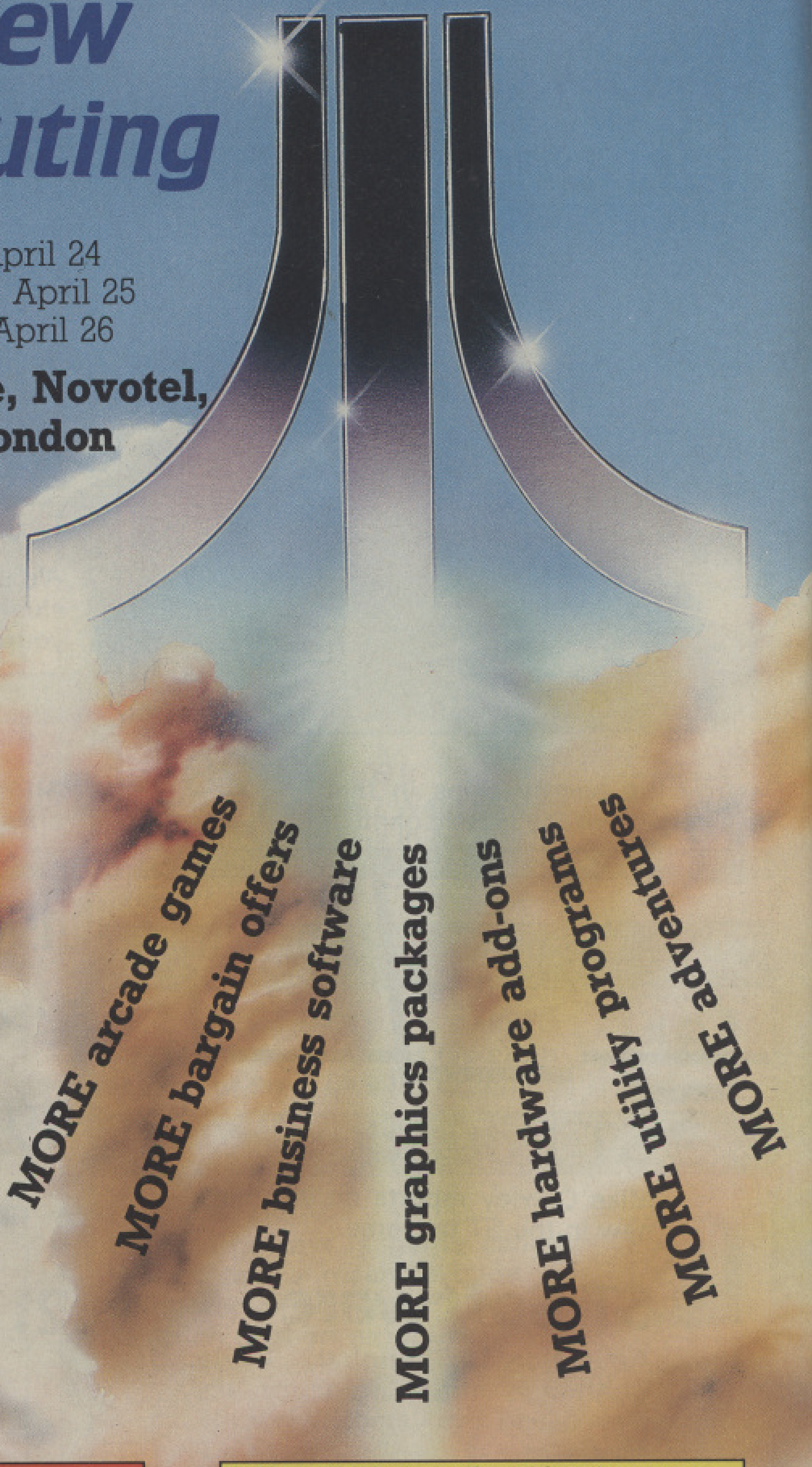
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Don't miss this launchpad for all that's new in Atari computing

ATARI COMPUTER SHOW

10am-6pm Friday, April 24
10am-6pm Saturday, April 25
10am-4pm Sunday, April 26

Champagne Suite, Novotel, Hammersmith, London



Experts are convinced 1987 will be the Year of Atari – thanks to exciting developments in the ST range, coupled with a renewed commitment by Atari to support and encourage the ever-popular Atari 8-bit range.

New hardware enhancements, and hundreds of new software packages, testify to how writers and developers throughout Britain and the USA are creating new ways of exploiting the power of Atari computers – and they'll all be on display at the April Atari Computer Show.

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NEW ATARI MODELS ROCK MICRO WORLD

● IBM PC compatible
● Low cost laser printer
● Three new ST models

ATARI has shaken the computer industry to its foundations with the dramatic announcement of new products in three major areas of the micro marketplace.

They include an IBM PC compatible of radically new design, a revolutionary desktop publishing system with low-cost laser printer, and three powerful additions to the ST series.

The Atari PC, which will sell in the US for under $600, is a fully-loaded, state of the art machine at a price low enough to send shudders through the ranks of competitors.

An observer at its unveiling in Las Vegas described it as "a compact and elegant system loaded with features not found on systems costing thousands of dollars more".

The unit includes a built-in 5.25in disc drive, integral power supply, and detachable IBM XT-style keyboard.

A second 5.25in drive or ST-style 3.5in drive, capable of reading discs in either ST or IBM format, can be attached externally.

The machine comes with 512k of ram, expandable to 640k via sockets on the motherboard. Standard serial, parallel and combination video ports – and an ST-style disc port – are included.

A mouse port based on the Microsoft Import chip is built in and an ST-type mouse included with the system, thereby enabling the Atari PC to run PC Gem, Microsoft Windows and mouse-based programs like Microsoft Word without adaptation.

On the graphics front Atari has somehow managed to squeeze IBM monochrome, CGA, EGA and Hercules graphics capabilities into the new PC.

It is the only PC compatible to include EGA graphics – completely downward compatible with CGA – as standard.

Atari is also bringing out a unique $200 monochrome green screen monitor for the PC that can display all its graphics modes – including the high resolution EGA colour mode – using grey scales to represent colours.

The monitor is intelligent and can recognise the frequency of signals coming from the combination video port, adjusting itself appropriately to display whatever kind of text or graphics the machine produces.

An Atari spokesman said the machine, a sleek and slimline 22 x 22 x 2 in, is "virtually 100 per cent compatible with existing software for the IBM PC and XT".

An observer who attended the Las Vegas launch told *Atari User:* "It's as if Atari, in one fell swoop, has stepped into the leading edge in three markets – high performance workstations, desktop publishing systems and the lucrative PC-compatible game.

"It's going to be the company to watch in 1987".

● For details of the Mega-ST range and Atari desktop publishing system turn to Page 3 of *Atari ST User*.

TURNOVER HAS DOUBLED

ATARI has successfully silenced its critics in the USA by bouncing back into profit in a big way. In the two years since Jack Tramiel took over the helm, he has dragged the corporation back from the brink of disaster.

Now the first report to shareholders since going public last month reveals sales of $60 million worldwide in the last quarter. And this is more than double the turnover for the same period last year.

But more important for the American money men was the news that net income for the first nine months of 1986 was $21.5 million compared to a loss of $29.2 million to September 30, 1985.

Paul Freiberger of the influential San Francisco Examiner described the results as "the biggest surprise of the year in the personal computer industry". Nor was he stinting in his praise of chairman Jack Tramiel. "He has already accomplished more than the pundits expected", he wrote.

Now Atari is well and truly in the black, American analysts are predicted that the sky will be the limit for the company during 1987.

Latest products at Show

The next Atari Computer Show – to be held at the Novotel, Hammersmith, in April – promises to be the most exciting of them all.

As well as offering all the latest hardware and software products from UK suppliers it will provide a shop window for the stunning new machines just announced by Atari.

Last March saw the world's first ever Atari-specific exhibition at the same venue. And the follow-up Atari Christmas Show at the Royal Horticultural Hall, Westminster, attracted close to 10,000 visitors in December.

Now the event that provides Atari's launch pad in the UK moves back to where it all started – the plush surroundings of the Novotel's Champagne Suite.

Exhibitors were queuing up after the Christmas Show to book space for April and in excess of 75 are expected to attend.

They will be bringing with them a host of new hardware and software, plus loads of bargains.

Again the show has the wholehearted support of Atari itself and the company will have a major presence.

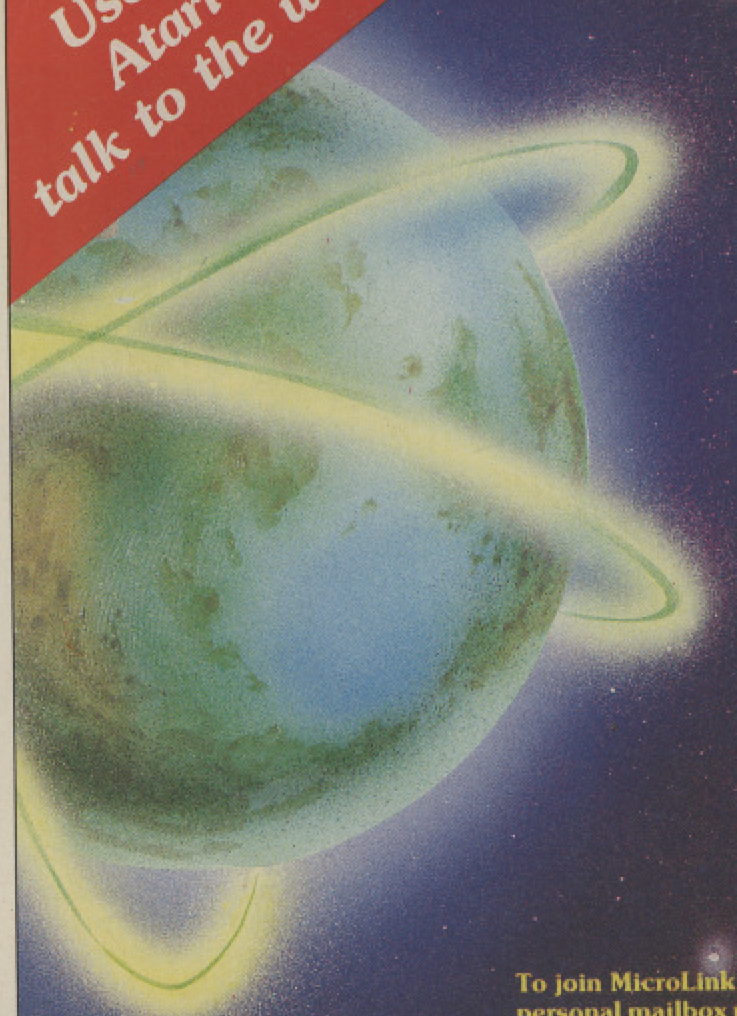
And of course there will be every chance for visitors to talk to Atari's own experts about all the latest exciting developments – including the revolutionary Atari desktop publishing system currently being developed in the USA.

The Atari Computer Show takes place at the Novotel on Friday, Saturday and Sunday, April 24 to 26.

Doors open at 10am each day and close at 6pm on Friday and Saturday, 4pm on Sunday.

A money-saving advance ticket order form is on Page 6 of this issue of Atari User.

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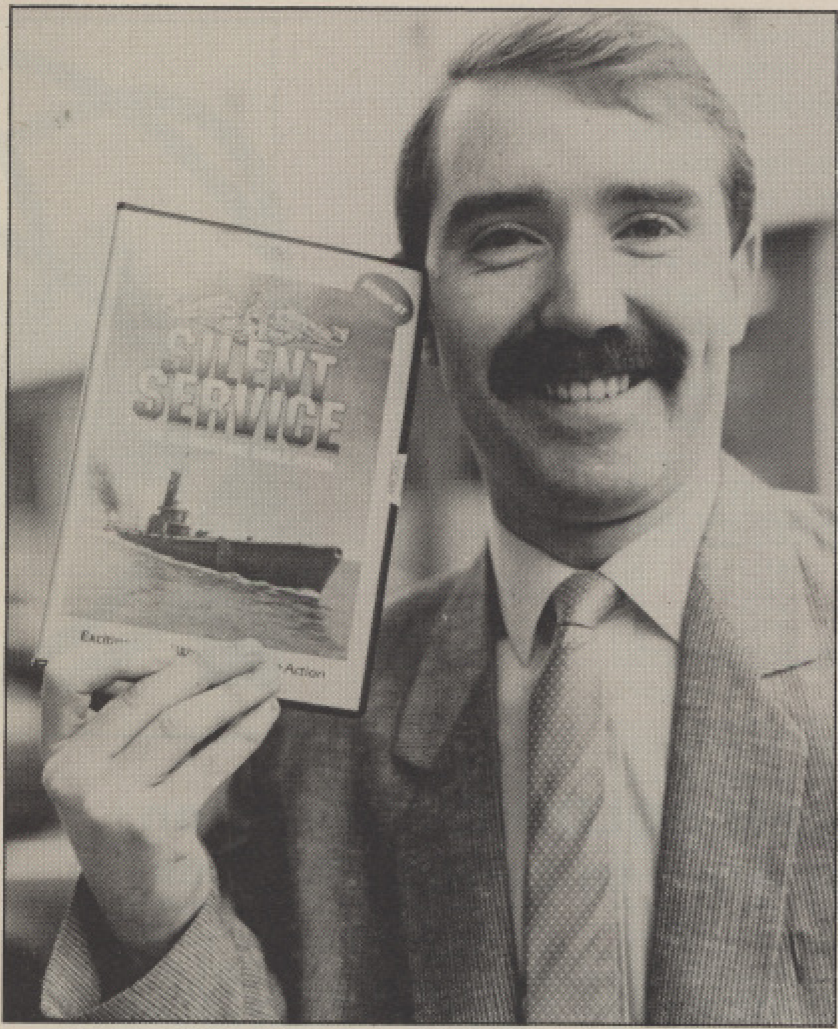
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AT2



Simon Barnard . . . seeks top writers

Want to be a millionaire?

A SEARCH has been launched nationwide to find Atari software writers with the ability to become "millionaires almost overnight".

Man behind the hunt for star programmers is Simon Barnard, the recently appointed development manager of MicroProse UK.

He is able to offer the potential of far greater rewards than can be normally expected in the UK because he is backed by the third largest entertainment software house in the US. "We believe that the UK has the best software writers", he told *Atari User.*

"And my job is to find them and offer them not only money but international recognition".

Simon Barnard points to the fact that MicroProse in the States is known to spend in excess of $l million developing each of its simulation blockbusters. Each of these is eventually marketed not only in America but also Europe and Australasia.

Royalties

"Our titles literally remain at the top of the US charts for years, not just weeks like products over here", he says.

"And that can translate into rather a lot of royalties, never mind substantial advances.

"So I don't think it would be unfair to claim that if we can find someone who can write a simulation like our Silent Service for the Atari ST, they could become a millionaire almost overnight".

Arcade

Although MicroProse is best known for its award-winning entertainment simulation software, Simon Barnard is not looking for writers exclusively in this area.

"We would be just as happy to find writers of top quality arcade games for the Atari", he said.

MicroProse recently set up its British headquarters in the picturesque Cotswolds market town of Tetbury, Gloucestershire, the home of Prince Charles.

Now it is hoping to more than emulate its success in the Atari 8 bit market in America where its titles account for more than 25 per cent of all sales.

New 8 bit micro will boost market

ATARI has unveiled the prototype of a revolutionary 8 bit machine which will revitalise this sector of the UK market.

With a built-in cassette and priced at under £100, the micro is expected to go on sale in May.

It will replace the previously announced cartridge-based 7800 machine which was also scheduled for its British launch that month.

The reason for this move is that Atari officials in the States have been convinced that the UK 8 bit market is still "tape driven".

One of the arguments they accepted was that in Britain there are difficulties in producing cartridges in that they require high volume production and long lead times.

So while the 7800 console may well be sold in the States, it will not now be shipped here.

This is good news for the 350,000 Atari 8 bit users as it will precipitate a flood of new software titles. "This will prove a real injection for the 8 bit scene", says Bob Gleadow, Atari UK's general manager.

It was he who brought the prototype of the new 8 bit machine from the States to show it to the British software houses.

And according to early reports they have given it an enthusiastic welcome.

Not that the Atari 8 bit user has in fact been ignored of late. For new titles have been appearing for the machines at the rate of up to 10 a month.

And the demand for development kits from software houses wanting to supply the market has never diminished.

"The fact of the matter is that the 8 bit scene had been ticking over quite nicely", says Bob Katz, Atari UK's software development manager. "But some users have felt a little ignored simply because most of the publicity has surrounded the ST range of late.

"The point is with so many end users out there, it almost becomes self perpetuating. It would be very bad business for a company to ignore the Atari 8 bit scene".

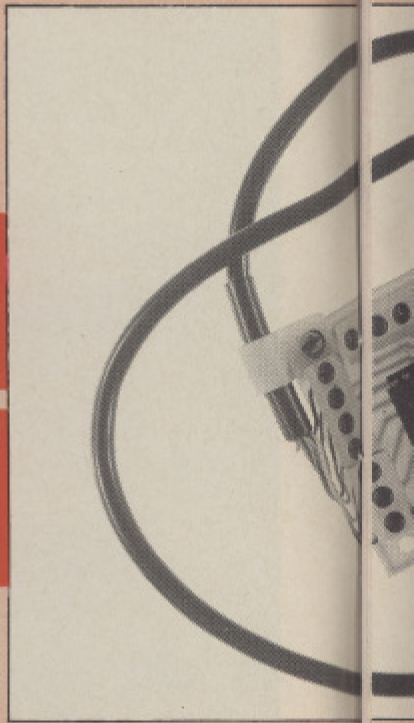
Nor is this just a company view.

John Arundel, marketing manager of Silica Shop, insists there has been no sign of support slipping for either the XL or XE.

"The 8 bit market is far from finished", he told *Atari User,* "in fact it isn't even slowing down".

And he points to his own company's current list of software titles for the machines – covering 16 A4 pages of closely-packed type – to demonstrate the extent of existing support.

Interface to total control



Part 8 of LEN GOLDING'S series on using your Atari to control devices

HERE'S a simple interface which allows your computer to scan a large network of sensors, such as pressure mats, microswitches and thermostats. It can be used for intruder alarms, energy management systems or any other task which requires this kind of continuous monitoring.

It's based on the joystick port, which has nine pins – seven signal lines plus 5v and 0v. Five of the signal lines can detect only whether a device is on or off, but the other two can distinguish between 228 different states.

These two analog lines will accept inputs from a wide range of devices, but you can't do anything very ambitious with only two lines per port. This simple interface uses a kind of electronic rotary switch to scan 16 separate devices and feed the results through a single analog line.

Figure I shows in simplified form how it works. Any one of 16 inputs can be connected to the common output line by setting up a binary number from 0000 to 1111 at the four control pins.

These codes represent decimal values 0 to 15 and we can send them from the joystick port by making pins 1 to 4 serve as outputs, in the now familiar way.

The switch's common line is connected to the analog input at pin 9, though it could equally well go to the other one at pin 5, provided you modify the software.

The programs described use port number 2, leaving port 1 free for an output device, such as the mains controller or four-channel switch described in previous issues.

Information from the sensor network can therefore be used to trigger sirens, switch lights on or off, control central heating systems, water your plants, feed the goldfish or whatever.

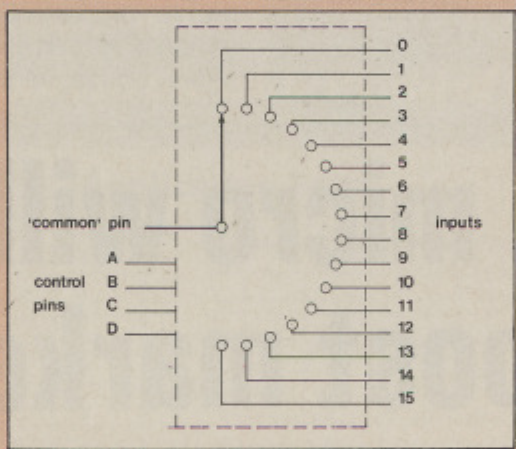


Figure I: Theory of switch operation

Figures II and III show the printed circuit board foil pattern and component layout. It could hardly be simpler to put together. The terminal blocks account for about one quarter of the total cost and may be omitted if you don't mind soldering the various leads directly to the PCB tracks.

The 4067 chip is a CMOS device, so needs careful handling. Leave it in its packaging until you're ready to insert it and touch an earthed metal appliance before handling the chip to get rid of any static charge that may have built up on your hands.

Make sure you insert the chip the right way round and check that every one of its pins is correctly fitted into the socket. Remember the interface has to plug into joystick port 2 if you're using the software shown here.

Software is fairly straightforward and, like Program I, can be written in Basic. Line 10 initialises an array to hold the 16 sensor values, turns the cursor off and clears the screen.

Line 20 sets up both joystick ports for output – if you prefer to keep port 1 set for input, change the POKE 54016,255 to POKE 54016,240.

Line 30 starts a loop which steps through the numbers 0 to 15, multiplies them by 16 (because we're using port 2) and sends out the corresponding binary codes at each step.

The short delay at line 40 gives the analog reading time to settle down once a particular input has been selected.

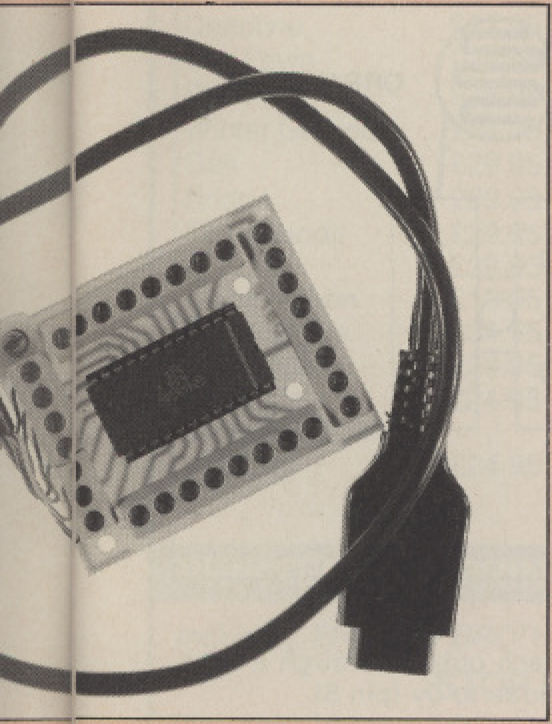
Line 50 stores the chosen sensor's value in the array, and line 60 completes the loop. Lines 70 to 90 print out all 16 values, then start the process again.

Unfortunately this method is very slow. It can take a couple of seconds for a new reading to register and if you want to add any extra lines of code — to trigger a siren for example – you will have to fit them into the main loop.

This will slow things down even further and makes the program needlessly complex. It's much more elegant to use the machine code routine in Program II – which is also listed in source form as Program III.

This is inherently faster. And because it is executed during the vertical blanking interval, it will run alongside your Basic program without interfering with it in any way.

The biggest advantage though, is that it synchronises precisely with the TV frame counter, which also drives



the computer's analog-to-digital converter.

With very little effort we can ensure that the chosen analog value is stable and valid by the time it is read, so there's no need for any delay loop. This routine updates each sensor's value about three times every second.

Now let's look at a practical burglar alarm system. Figure IV shows the simplest DIY layout using normally closed switches on windows and doors. They are wired in series, so if any is opened the circuit is broken and some kind of sensing device sounds an alarm.

This approach has three drawbacks: it cannot tell you which switch has been opened, an enterprising burglar can easily bridge the switch terminals using a jump lead, and if a fault occurs it can be very tedious to trace.

Figure V shows how our gadget can overcome these problems. When a switch is closed, it shorts out the resistor across its terminals, leaving only 150k in circuit, which returns a number around 75 at address 626.

```
5 REM Len Golding: Gadgets VIII
6 REM Program I
10 DIM SENSOR(15):POKE 752,1:PRINT CHR
$(125)
20 POKE 54018,56:POKE 54016,255:POKE 5
4018,60:POKE 54016,0
30 FOR X=0 TO 15:POKE 54016,X*16:REM U
sing port 2
40 FOR W=1 TO 20:NEXT W
50 SENSOR(X)=PEEK(626)
60 NEXT X
70 POSITION 2,2
80 FOR S=0 TO 15:PRINT S,SENSOR(S);"
":NEXT S
90 GOTO 30
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	7371	6	3197	10	7507
20	9297	30	9308	40	3639
50	3850	60	1375	70	2353
80	8050	90	1420		

Program I

```
5 REM Len Golding: Gadgets VIII
6 REM Program II
10 FOR X=0 TO 63:READ D:POKE 1710+X,D:
NEXT X:REM Store the machine code
20 DATA 104,169,56,141,2,211,169,255,1
41,0,211,169,60,141,2,211,169,0,141,0
30 DATA 211,141,255,6,162,6,160,208,16
9,6,32,92,228,96,174,255,6,173,2,210
40 DATA 157,238,6,232,224,16,144,2,162
,0,142,255,6,138,10,10,10,10,141,0,211
,76,95,228
50 X=USR(1710):REM New routine now exe
cuted during stage 1 vertical blank
60 POKE 752,1:PRINT CHR$(125):REM clea
r screen
70 POSITION 2,2
80 FOR X=0 TO 15:PRINT X,PEEK(1774+X);
"  ":NEXT X:GOTO 70:REM Print current
values for all sixteen sensors
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	7371	6	3562	10	14880
20	10926	30	10761	40	12500
50	18897	60	9375	70	2353
80	23935				

Program II

Opening the switch puts an extra 150k in series and the number goes to around 150. Cutting the wire will return 228 and bridging the switch with a jump lead will give 0.

```
10 COUNT =   $06FF
20 PACTL =   $D302
30 POT2  =   $D202
40 PORTA =   $D300
50 SETVBV =  $E45C
60 TABLE =   $06EE
70 SYSVBV =  $E45F
80        *= $06AE
90        PLA
0100      LDA #56     Set up joystick
0110      STA PACTL   ports for output
0120      LDA #255
0130      STA PORTA
0140      LDA #60
0150      STA PACTL
0160      LDA #0      Set all outputs
0170      STA PORTA   to zero
0180      STA COUNT
0190      LDX #VBCODE/256 Set new vector for
0200      LDY #VBCODE&255 immediate VBLANK
0210      LDA #6
0220      JSR SETVBV
0230      RTS
0240 VBCODE
0250      LDX COUNT   Get channel number
0260      LDA POT2    Read pot value
0270      STA TABLE,X Store it in TABLE
0280      INX         Next channel?
0290      CPX #16
0300      BCC OK      Branch if <16
0310      LDX #0      Else reset to 0
0320 OK
0330      STX COUNT   Update counter
0340      TXA
0350      ASL A       Shift COUNT four
0360      ASL A       places left, to
0370      ASL A       get the binary
0380      ASL A       number  & switch
0390      STA PORTA   to next channel
0400      JMP SYSVBV  Exit vertical blank
```

Program III: Source listing for Program II

This ability to distinguish four separate states is a clear advantage and the system can easily be adapted to work with normally open switches, such as pressure mats.

Figure VI shows how to wire four

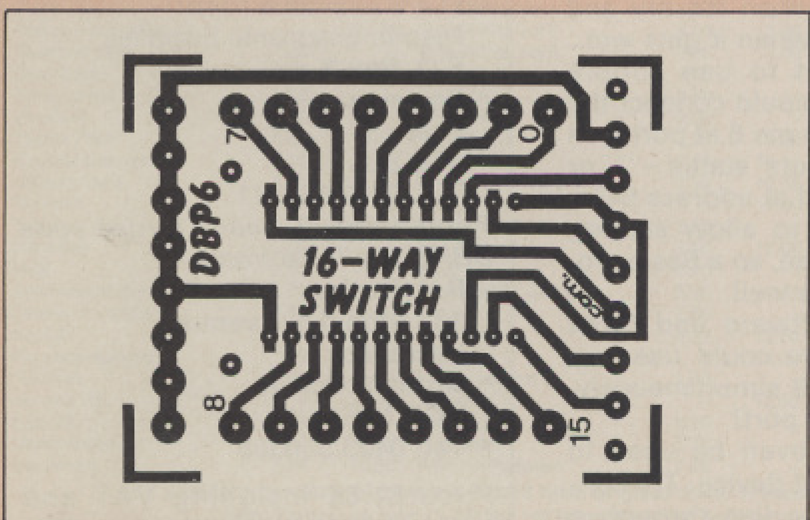


Figure II: PCB Foil pattern

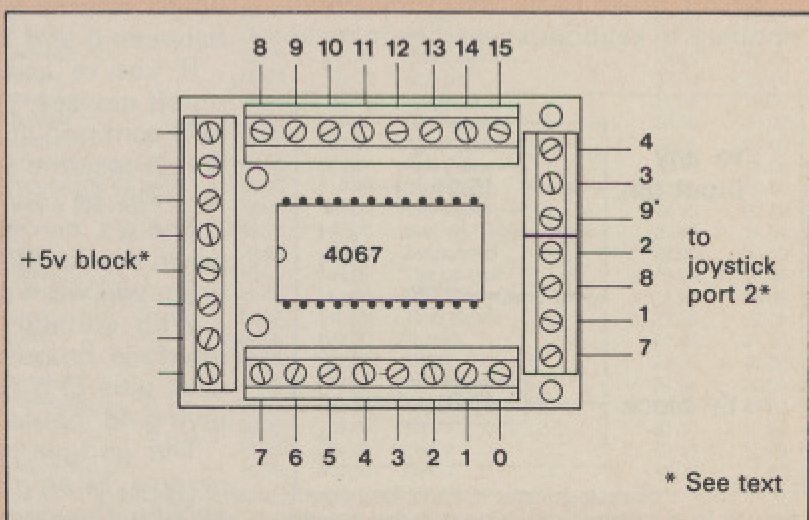


Figure III: Component layout on PCB

switches within a single room – only one 5V line needs to go all the way back to the computer, which saves cost and complexity.

Since the switches are effectively in parallel rather than series, it's easy to see which one has been activated. You can tell instantly where the intruder attempted to gain entry and trace faults very quickly.

If you want to really impress the neighbours, why not draw a house plan on screen, with all sensors marked in colour to indicate whether they are open or closed?

The other main application for this gadget is energy management. You could use sensors to monitor individual room temperatures or keep track of lights that were (or needed to

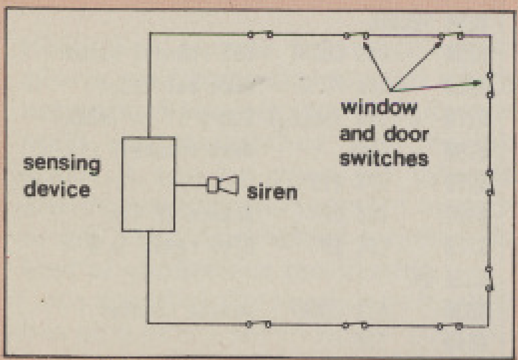


Figure IV: A simple security system

be) switched on.

To measure temperature, use a thermistor whose resistance at room temperature is between 100k and 400k – type VA1067 is suitable.

Individual devices may vary by up to 20 per cent, so if you want accurate readings you will need to calibrate each one, using a conventional room thermometer.

Light levels can be measured using our friendly cadmium sulphide cell — type ORP12 works quite well. Figure VII shows how you can wire these sensors into the system, using terminal blocks.

As for other uses, well, you could connect 16 keyboard switches to make

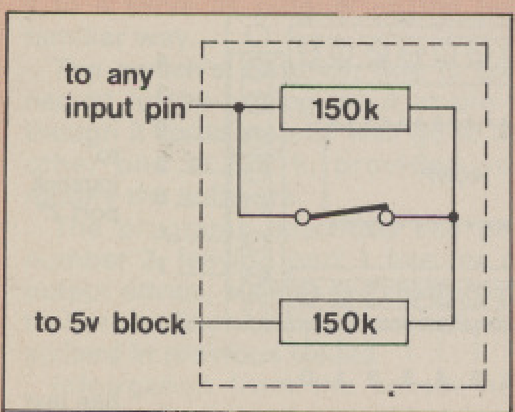


Figure V: A tamper-proof switch for use on doors and windows

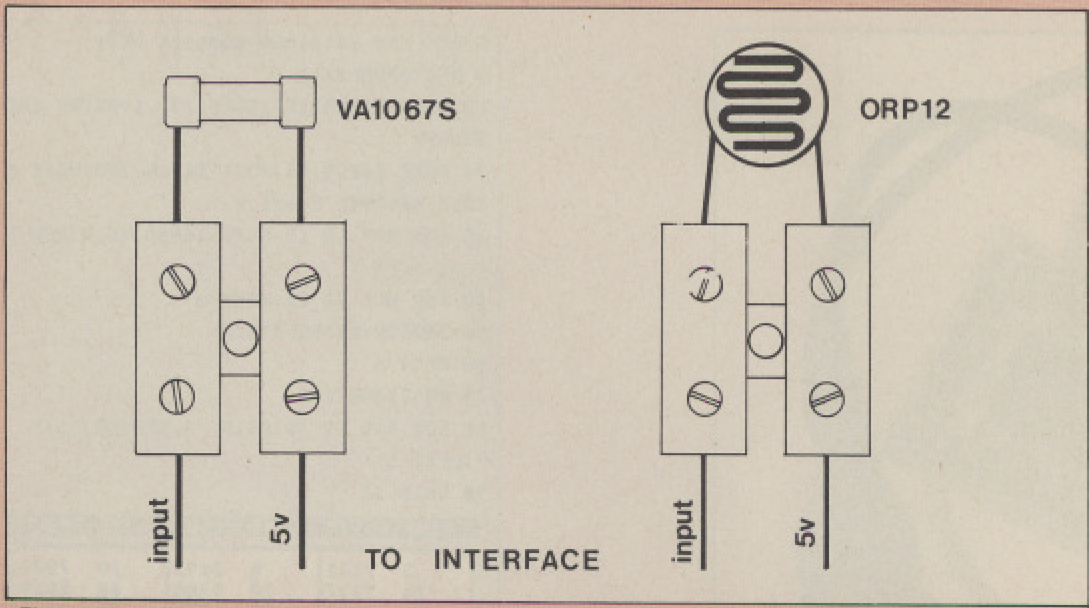


Figure VII: Temperature and light sensor units

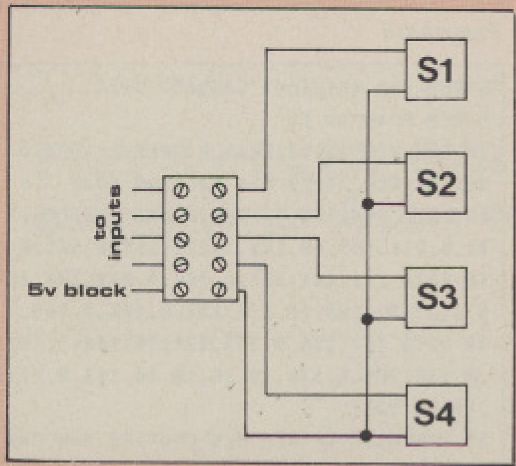


Figure VI: Improved switching network

a complex signalling system (for a disabled person perhaps) and unlike the simple keypad described in part 5, this gadget will respond to more than one key at a time.

How about fitting moisture sensors in the soil beside your favourite conservatory plants? A couple of stiff copper wires will do, though they will tend to corrode before long. Carbon rods reclaimed from old dry batteries are better and you can solder leads directly to the brass caps.

If you encase the rods in epoxy resin, leaving just the ends showing, they will make a rain or flood detector which returns 228 when it's dry and between 0 and 100 when it gets wet.

If you're content to use simple on/off devices, you could connect the PCB common line to pin 6 at port 2, in which case the sensors' status – '1' or '0' – will be returned at address 645.

There's no need to allow settling down time in this case, so a Basic program will work quite well.

With suitable software and three interface boards you could use joystick pins 5, 6 and 9 simultaneously, giving 48 inputs per port!

The gadget can even be used in reverse, as an output device. Try connecting the common line through a 220 ohm resistor to 5V (joystick pin 7) and take each output through a light-emitting diode to 0v (pin 8).

Numbers at the control pins will switch on one LED at a time, and there you have the basis for a wheel of fortune, roulette game or bargraph display.

● *That should keep you busy until next time, when we'll be looking at sound-activated switches.*

PARTS REQUIRED

		Maplin codes
1	4067BE analog switch IC	QW42V
1	24-pin IC socket	BL20W
3	8-way PC terminal blocks	RK38R
1	4-way PC terminal block	RK73Q
1	3-way PC terminal block	RK72P
1	Cable 'P' clip 3/16"	LR44X

Approximate cost £5.86 with terminal blocks, £3.18 without.

A joystick extension lead is available from Tandy stores (code 276-1978) or from large computer shops, priced around £3.30.

All components, including the sensor devices mentioned in the text are available from:
Maplin Electronic Supplies
P.O. Box 3
Rayleigh
Essex
SS6 8LR
Tel: 0702 552911

Printed circuit board (order code DBP6) available from:
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Harrogate
North Yorkshire
HG2 7NS
Tel: 0423 508359

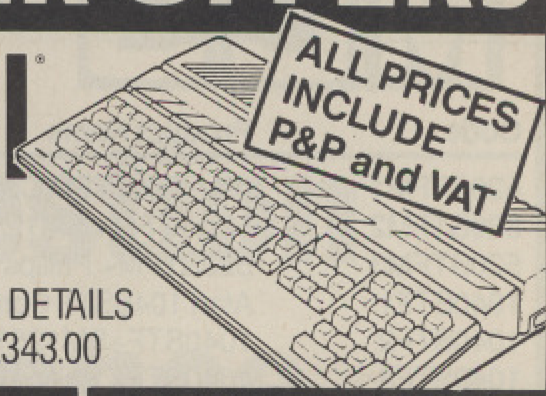
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Temple of Apshai Trilogy	£24.95	V.I.P. Lite	£99.95
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The question of existence

By Brillig

HELP is at hand for David Purvis of Cardiff who has been ensnared by Infocom's Sorcerer. In fact, things are so bad that after diving down the coal chute to meet up face to face with his younger self, David soon ceases to exist!

The key to the problem is given below for David and for many others like him who are baffled by what is actually a beautifully logical puzzle. It concerns the interaction of the past, present and future, and the consequences of influencing history.

As the whole answer is impossible to give in coded form below, let me just say this:

When you (as the older self) meet your younger self, you've got to ensure that your younger self will grow up so that one day he will be the older self standing just where you are and similarly meeting his younger self!

If you don't assist the younger self he will not eventually become the older self. And that's why you, as the older self, will suddenly cease to exist. Get it? You will if you go on to decode the clues below.

Can anyone help J C Bradbury of Sheffield (Glitch Master for the second month running) who wants to know how to find the correct combination to the jewel case chained to the cellar wall in Lapis Philosophorum? The number found under the desk appears to be a red herring.

He also wonders if it is possible to get past the boulder which blocks the passage near the Troll's cave.

Eric Nolan from Dublin has multiple troubles. He cannot find the grate from below ground in Zork I and although he has listened to the poem he is unable to get the plotter in Hitch-Hiker's Guide to the Galaxy. Look below for a clue to Zork.

The problem in HHGG is probably one of finding the right syntax. You simply need to TYPE "BRILLIG" ON KEYBOARD (replacing Brillig by the discovered word which is random from game to game). Don't forget the quotation marks though.

Eric has contributed this month's "For fun" tips below. Many thanks, Eric. I hope other readers will follow suit and send in their tips so that we can all get the most out of our adventures.

Scott Adam's Mystery Fun House has caused some head-scratching. Ken White suggests that adventurers might welcome advice on how to get the coin from the grating since the solution is rather devious.

Mark Powell from Lewes would like to know how to ride the merry-go-round and reach the catwalk in the same adventure. Answers below. He would also like help with Morden's Quest. Has anyone got a complete solution to this one?

Both Ken and Mark have sent in some comprehensive tips for other games. Thanks to both of you.

Finally, a mention of an unusual service. Mrs Pat Winstanley of 13 Hollington Way, Wigan WN3 6LS publishes Adventure Contact, a magazine that is aimed not at adventure players but at adventure writers.

The service caters for all authors whether novice or experienced. If you're interested, why not write to Pat at the above address?

CLUES CORNER

SORCERER
Ceasing to exist in the coal bin room?
NOIT ANIBM OCEH TMIH EVIG
MOOR DETN ALSE HTOT TEGR EVEN LLIW EHES IWRE
HTO
FLES REDL OEMO CEBD NACA MLOG TEGR O

ZORK I
Can't unlock the grate?
WOLE BMOR FTIK COLN U
EZAM EHTN IHTI WMOR FENS IETA RGEH T
For fun:
TNES ERPT ONSI TINE HWEF INKE KATO TYRT
TNES ERPE RASE VINK HTOB NEHW EZAM EHTN IEFI
NKEK ATOT YRT
EFIN KYTS UREH TESU OTYR T

ENCHANTER
For fun:
PLEH SIHR OFMI HKNA HT
YAWR IATS GNID NIWE HTOT UOYW OLLO FRER UTNE
VDAE HTEK AM
LLEP SDAC LUKE HTTS ACNE HT

MYSTERY FUN HOUSE
Want the coin from the grating?
HCNA RBNO MUGK CITS NEHT MUGW EHC
HCNA RBHT IWNI OCTE G
Stumped by the merry-go-round?
PMUJ NEHT PUKO OLEL OPOG ESRO HOGY RREM OG

GLITCH OF THE MONTH

Sheffield man Jon Bradbury has found a beauty in Ariolasoft's Lapis Philosophorum. The aim of this adventure is to cure the king with a potion made up of water and the philosopher's stone.

He says that if you go straight to the king with GO CASTLE and WEST, the game responds with "The King drinks the potion and is cured" and the game is over. The strange thing is that you can do this without ever having found the water or the stone!

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Simply fill in the general section and then the column which is based on the Atari computer that you own. If you own both 8 and 16 bit computers then fill in both sections.

All the forms we receive will take part in a draw, and the first 25 names drawn out of the bag will each receive an *Atari User* T-shirt.

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☑ 15-20 ☐ 30-40 ☐ Over 50

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☐ 6 months-1year ☑ since issue 1

How many other people read your copy of Atari User?
☐ 0 ☑ 1 ☐ 2
☐ 3 ☐ more than 3 ______

If you play games what type do you enjoy most?
☐ Adventure ☑ Arcade
☑ Strategy

How often do you type in our game and program listings?
☐ Every issue ☐ Most issues
☑ Now and again ☐ Never

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☐ Juki ☐ Star
☑ Atari ☐ Other______

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☑ Printer ☐ Modem
☐ Monitor ☐ Disc drive
☐ Other

Which do you eventually intend to buy?
☐ Printer ☑ Modem
☐ Monitor ☐ Disc drive
☐ Other

How do you rate your knowledge of Basic?
(0-9) 5

How do you rate your knowledge of Assembler?
(0-9) 0

Which language other than Basic and Assembler do you use most?
☐ None ☑ Pascal
☐ Modula II ☐ Forth
☐ C ☐ Action!
☐ Other ______

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☑ Page 6 ☐ Monitor
☑ ST User ☐ Other ______

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Place a number in the range of 0 (no interest) to 9 (very interested) next to the following categories:

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Beginners' Assembler	7	9
Other languages	9	9
Games listings	5	5
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Adventure hints & tips	0	0
Software reviews	9	9
Hardware reviews	9	9
Book reviews	8	8
Gadgets	7	7
Mailbag	6	6
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American Scene	9	9
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☑ 800XL ☐ 130XE

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☑ Word processing ☐ Graphics
☐ Database ☐ Other

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☐ Yes ☑ No

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☐ 520STM ☐ 1040

How much memory does your ST have?
☑ 512k ☐ 1Mb ☐ 2Mb ☐ 4Mb

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☑ Atari 314 ☐ Cumana
☐ Atari 354 ☐ AST
☐ Other______

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☐ Haba ☐ Software Punch
☐ Other______

Do you have Gem/Tos on disc or rom?
☐ Disc ☑ Rom

Do you intend to buy the new blitter chip?
☑ Yes ☐ No

Which of the following types of programs do you use?
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☑ Word processing ☐ Graphics
☐ Database ☑ Other

Do you own or intend to buy Computer Concept's Fast Basic?
☐ Own ☐ Intend
☑ Don't intend

What kind of display do you use?
☑ Colour monitor ☑ TV
☐ B & W monitor

Post to:
Reader Survey, Atari User, Europa House, Chester Road, Hazel Grove, Stockport SK7 5NY

Accessing CIO from machine code

LAST month we took a general look at the way that the Atari operating system handles data transfer operations via the Central Input/Output system. This time we'll take a closer look at how CIO works, and see a simple example of its use from machine code.

First though, how did you get on with the puzzle I left you with last time? If you remember, I gave you the following line to type in:

OPEN #7,8,0,"P:":POKE 838, PEEK(950):POKE 839,PEEK(951)

You probably noticed that everything the computer normally displays on the screen was sent to the printer instead . . . but why?

Well from last issue you know that IOCB zero – assigned to the screen editor – resides at location $340 (832 decimal), which means that the POKEs to 838 and 839 changed the values of IOCB0 plus 6 and ICOB0 plus 7.

If you look at Figure I you will see that these locations define the screen editor's Put-Byte routine through which text is sent to the screen.

Since you also know that IOCB seven – which we OPENed to the printer – exists at $3B0 (944), the PEEKs to 950 and 951 return the equivalent two locations for the printer handler routines. Thus all we have done is to POKE the address of the printer's Put-Byte routine into the place where CIO expects to find the screen display Put-Byte address.

We'll look in the future at how to use CIO from Basic, but let's start off by seeing how to access it from machine code. Don't be put off if you don't know anything about machine code – we'll keep it as simple as possible. All you will need to know are a couple of 6502 operations.

We will be using the three main 6502 registers, known as A, X and Y, which are really just the machine code equivalent of Basic variables.

These may be given values by using the commands LDA, LDX and LDY – short for Load A, Load X and Load Y, rather like the LET command in Basic. They may be POKEd back into memory with the store commands STA, STX and STY.

The other main command we shall use is the machine code version of GOSUB, known as JSR – which simply means Jump to Subroutine.

André Willey continues his series on the Atari's input/output facilities

In order to make use of CIO for yourself you must follow a set of simple steps:

First decide on the IOCB you wish to use. We'll use number one in these examples.

Then set up the various bytes within that IOCB, dependent on which function you wish to use.

Next store the IOCB number times 16 in the X register and jump to the subroutine called CIOV to execute.

Finally, check the status of the operation before proceeding.

Program I is a pretty simple piece of machine code which opens channel one to the printer, sends a small message and then closes it again.

Lines 160 to 360 are used to tell the computer what names we are going to use for the various locations involved. This is known as an equates table, because it equates the names we want to use with the real addresses in memory.

If you wanted to use a different channel number, simply change the address in line 160 according to Figure II. Don't forget to adjust line 500 accordingly also.

Lines 400 to 490 set up IOCB one ready to open the channel to the printer. This is the direct equivalent of the Basic command:

OPEN #1,8,0,"P:"

In fact you can easily see the similarity between the two versions of the same command. The **OPEN** in Basic translates to the LDA #3 on line 400, since 3 is the CIO code for Open.

The **#1** in Basic is the channel number, which we have already defined in our equates table.

The second and third Basic parameters are always placed into ICAX1 and ICXA2, thus the values of **8** and **0** are stored there.

The final parameter in Basic is the filename – **"P:"** – which is actually on line 770 in the machine code program. Since a single byte can only store a number between 0 and 255, and the address of the "P:" filename is much greater than this, we have to use a special notation called low/high address storage.

This is actually very simple, and all it means is that we split the large number into two smaller byte-size numbers, in much the same way as we use tens and units to represent larger numbers as two smaller digits when counting with ordinary numbers.

For example, an address of $1234

Address	Label	Bytes	Description
IOCB + 0	ICHID	1	Index into HATABS
IOCB + 1	ICDNO	1	Device number (eg: D1:, D2:)
IOCB + 2	ICCOM	1	Command type (eg: OPEN, CLOSE)
IOCB + 3	ICSTA	1	Current Status of Device
IOCB + 4,5	ICBAL/H	2	Buffer or filespec address
IOCB + 6,7	ICPTL/H	2	Address of Put-Byte routine (–1)
IOCB + 8,9	ICBLL/H	2	Buffer data length sent/returned
IOCB + 10	ICAX1	1	Auxiliary byte 1
IOCB + 11	ICAX2	1	Auxiliary byte 2
IOCB + 12	ICAX3	1	Auxiliary byte 3
IOCB + 13	ICAX4	1	Auxiliary byte 4
IOCB + 14	ICAX5	1	Auxiliary byte 5
IOCB + 15	ICAX6	1	Auxiliary byte 6

Figure I: IOCB structure

IOCB Zero	$340	(832)
IOCB One	$350	(848)
IOCB Two	$360	(864)
IOCB Three	$370	(880)
IOCB Four	$380	(896)
IOCB Five	$390	(912)
IOCB Six	$3A0	(928)
IOCB Seven	$3B0	(944)

Figure II: IOCB start addresses

would be stored as $12 in the high-byte address and $34 in the low-byte address. These are often called the Most Significant Byte and the Least Significant Byte – MSB and LSB – but we'll stick to high and low for now.

All that needs to be done now is to load the X register with the channel number times 16, which is done on line 500. This may seem a little odd, but if you think in hexadecimal for a moment all this means is that channel one would be $10, two would be $20, and so on up to $70 for channel seven. Sometimes looking at a problem in the computer's terms makes it very much clearer.

Once the IOCB is thus prepared, you may jump to CIOV with the JSR command. Before returning to your code, CIO will set a special switch inside the 6502 chip itself.

If the function was completed correctly this will be positive, but if there was any error it will be set to negative. Thus to test if there has been an error during the I/O operation all you need to do is perform a BMI instruction straight after your JSR. This means "Branch if Minus", and acts like an IF ... THEN GOTO command in Basic, jumping somewhere only if CIO has set up a minus code.

Should you be interested in the type of error, CIO also stores the error number in the Y register. In fact you could always check to see that the Y register contains a one – the code for no error – instead of testing for a minus.

Once the OPEN command has set up the system you may then send anything you like to it. We've chosen the simple "HELLO THERE" message on line 790. Note the carriage return at the end of the text because the output command we'll be using keeps sending characters until it comes to an end-of-line character, AtAscii code 155 – otherwise known as the carriage return.

As before, we use the low-high format to store the address of the message, and set the ICCOM command byte to tell CIO what we want it to do with that text.

This time we want to output a line, which is command number 9. As the X register will not have been altered since the last time we set it, we can just call CIOV again, and follow it with the same error test we used earlier.

Finally, store the Close command (12) in ICCOM and call CIOV again.

Now all this may seem to be an awful lot of work to go through to do what Basic does in the single command **LPRINT "HELLO THERE"**, but don't forget that there are many things that CIO is capable of that Basic does not fully support. Next time you type LPRINT just think of all the work Basic has to go through to perform that one simple task for you!

● *Next month we'll be providing a full list of these other commands, and how each works. In the meantime, consider the results of the following:*

OPEN #6,12+16,7,"S:"

(Hint: If ICAX1 is set to 4 for read data, and 8 for write data, what might 12 mean? And what do you think the +16 does? See what happens without it.)

```
0100 ;Example of the use of CIO to
0110 ;send "HELLO THERE" to the printer.
0120 ;By Andre Willey, Atari User Feb '87
0130 ;
0140 ;Set equates for CIO addresses
0150 ;
0160 IOCB =  $0350    ;Use IOCB one
0170 ;
0180 ICHID = IOCB+0
0190 ICDNO = IOCB+1
0200 ICCOM = IOCB+2
0210 ICSTA = IOCB+3
0220 ICBAL = IOCB+4
0230 ICBAH = IOCB+5
0240 ICPTL = IOCB+6
0250 ICPTH = IOCB+7
0260 ICBLL = IOCB+8
0270 ICBLH = IOCB+9
0280 ICAX1 = IOCB+10
0290 ICAX2 = IOCB+11
0300 ICAX3 = IOCB+12
0310 ICAX4 = IOCB+13
0320 ICAX5 = IOCB+14
0330 ICAX6 = IOCB+15
0340 ;
0350 CIOV =  $E456    ;CIO Vector address
0360 CR =   155       ;Carriage Return character
0370 ;
0380 ;Open channel zero to printer
0390 ;
0400      LDA #3      ;OPEN command
0410      STA ICCOM
0420      LDA #FILE&255 ;Filespec address low byte
0430      STA ICBAL
0440      LDA #FILE/256 ;Filespec address high byte
0450      STA ICBAH
0460      LDA #8      ;Output mode
0470      STA ICAX1
0480      LDA #0      ;null value
0490      STA ICAX2
0500      LDX #$10    ;Set X for channel one
0510      JSR CIOV    ;Jump to CIO subroutine
0520      BMI ERROR   ;Test for an error
0530      ;           If so, jump to ERROR
0540 ;
0550 ;Tell CIO where in memory to find message to print
0560 ;
0570      LDA #9      ;PRINT line command
0580      STA ICCOM
0590      LDA #MESSAGE&255 ;Address of message low byte
0600      STA ICBAL
0610      LDA #MESSAGE/256 ;Address of message, high byte
0620      STA ICBAH
0630      JSR CIOV    ;Jump to CIO subroutine
0640      BMI ERROR   ;Test for an error
0650      ;           If so, jump to ERROR
0660 ;
0670 ;Close channel one again
0680 ;
0690      LDA #12     ;CLOSE command
0700      STA ICCOM
0710      JSR CIOV    ;Jump to CIO subroutine
0720      BMI ERROR   ;Test for an error
0730      ;           If so, jump to ERROR
0740 ;
0750 MORE ;           Continue your program here...
0760 ;
0770 FILE .BYTE "P:",CR ;Filespec for printer
0780 ;
0790 MESSAGE .BYTE "HELLO THERE",CR ;text to print
0800 ;
0810 ERROR ;          .... Comes here if an I/O Error occurs
0820 ;
0830      .END
```

Program I

More £25 winners!

Send your five-liners in to us at: Five-liners, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

MACHINE CODE TO STRINGS from HORWARD MORGAN

THIS takes machine code routines from memory and turns them into those long strings without you having to press the control key once. The normal way for executing machine code is to use:

X=USR(1536)

With machine code stored in a string such as P$, you use:

X=USR(ADR(P$))

Using machine code strings means that you don't have to wait for the data to be poked in and the Atari will automatically store the machine code in free memory.

The machine code can be up to 113 bytes long. You can convert longer strings by breaking them up into sections and later recombining them using:

P$(LEN(P$)+1)=Q$

where Q$ is the second part of the routine.

Once the string is created the program will list it to disc under the chosen filename. To use cassette instead of disc, you should change line 4 to:

4 ?"POKE842,12:L.";CHR$(34);"C:";CHR$(34);",1,3:G.5":POS.0,0 :POKE 842,13:END

Line Breakdown

1 Inputs the routine's name, start address and length of the string.
2 Inputs the file name and reads the machine code into the string.
3 Creates the small program containing the string.
4 Saves the string to disc or tape.
5 Deletes the converter.

```
1 CLR :DIM Q$(40),P$(113),F$(12):? CHR$(125);"String Purpose";:INPUT Q$:? "Start Address ";:INPUT A:? "Bytes to read ";
2 INPUT B:? "Disk filename ";:INPUT F$:I=1:FOR Q=A TO A+B:X=PEEK(Q):P$(I,I)=CHR$(X):I=I+1:NEXT Q:? CHR$(125)
3 POKE 82,0:? :? "1 REM ";Q$:? "2 REM run with X=USR(ADR(P$))":? "3 CLR:DIM P$(";B;")":? "4 P$=";CHR$(34);P$;CHR$(34)
4 ? "POKE 842,12:L.";CHR$(34);"D:";F$;CHR$(34);",1,4";":G.5":POSITION 0,0:POKE 842,13:END
5 ? CHR$(125):POKE 82,0:POSITION 0,2:FOR I=1 TO 5:? I:NEXT I:? "POKE 842,12":POSITION 0,0:POKE 842,13:END
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
1 24230	2 20966	3 20391
4 14571	5 18759	

WORMY by M.J. TREBLE

In this small game you control a worm which works its way around the screen, eating the white diamond shaped flowers. If you go back on yourself, you will die.

Line breakdown

10 Draws the screen and initialises variables.
20 Draws the flower and updates the score.
30 Draws the worm, reads the joystick and tests for death.
40 Erases old flower.
50 Prints the score at the end of the game and restarts.

```
10 GRAPHICS 7:POKE 710,229:POKE 709,15:POKE 755,0:COLOR 1:PLOT 0,0:DRAWTO 159,0:DRAWTO 159,79:DRAWTO 0,79:DRAWTO 0,0:X=80:Y=40:S=-200:D=-8
20 O=RND(0)*150+5:P=RND(0)*70+5:COLOR 2:PLOT O-2,P:DRAWTO O,P-2:DRAWTO O+2,P:DRAWTO O,P+2:DRAWTO O-2,P:S=S+200:? "KScore=";S
30 COLOR 3:PLOT X,Y:T=STICK(0):E=T-15+(T=15)*D:X=X+(E=-8)-(E=-4):Y=Y+(E=-2)-(E=-1):D=E:LOCATE X,Y,L:ON L+1 GOTO 30,50,40,50
40 COLOR 0:PLOT O-2,P:DRAWTO O,P-2:DRAWTO O+2,P:DRAWTO O,P+2:DRAWTO O-2,P:GOTO 20
50 GRAPHICS 17:POSITION 5,7:? #6;"GAME OVER":POSITION 5,9:? #6;"score:";S:FOR Z=0 TO 1000:NEXT Z:RUN
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 32		

BIG TEXT from MARK GODFREY

DISPLAYING large characters on a graphics 8 screen is normally impossible, but this routine shows you how to do it. The program reads the character's definition from the character table and then POKEs this directly to the screen, blowing it up as necessary.

Line Breakdown

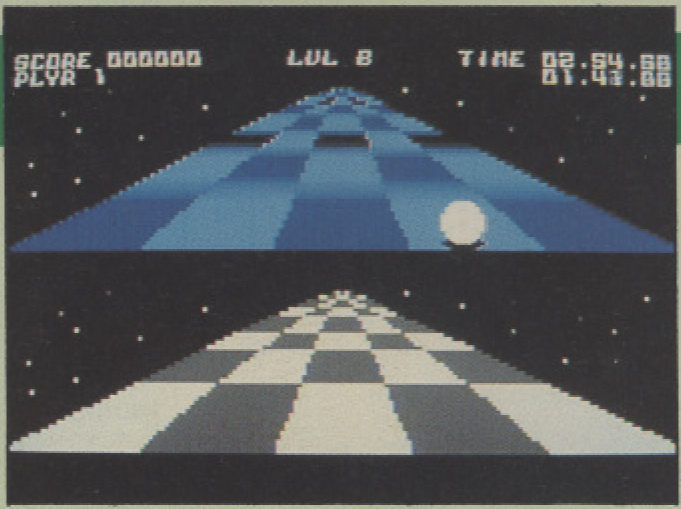
10 Gets the desired string from the user.
20 Gets the desired size and begins to read the character from the table.
30 Checks to see if the right-hand side of the screen has been reached.
40 Finds the location of the screen.
50 Puts the characters on to the screen one line at a time.

```
10 DIM B$(100):GRAPHICS 0:POSITION 15,0:? "TYPE TEXT":POSITION 1,3:POKE 710,0:INPUT B$:? :? "SIZE(1/10)"
20 INPUT SIZE:GRAPHICS 8:POKE 710,0:FOR I=1 TO LEN(B$):LOOK=57344+(ASC(B$(I,I))-65)*8+33*8
30 IF I>39 THEN H=(8*40*SIZE)
40 SCRN=PEEK(88)+PEEK(89)*256+I+H:FOR J=0 TO 7 STEP (1/SIZE)
50 POKE SCRN+J*(40*SIZE),PEEK(LOOK+J):NEXT J:NEXT I
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 18813	20 15990	30 4787
40 10150	50 9744	

Trailing behind



Program: Trailblazer
Price: £9.95 (cassette), £14.95 (disc)
Supplier: Gremlin Graphics, 10 Carver Street, Sheffield S1 4SF.
Tel: 0742 753423

IF you want an action packed game which doesn't involve killing little green men or Russians, this may be for you.

The object is to keep a ball on a path of coloured squares. There are holes in the path which you must steer clear of by using the ball's ability to jump and accelerate.

Different coloured squares have a variety of effects. Yellow squares, for instance, will cause you to bounce, and purple squares reverse the left and right control.

The squares are strategically placed to be a help in some places and a hindrance in others.

There are 21 courses in all. In the standard game you must complete each course in the fastest time possible. Bonuses are awarded depending on the time remaining at the end of each round.

There is a 'trail' option available in which you can select any three courses to race on, with a 99 second time limit to complete each course.

A two player option is also included. Here the screen is split into two, with player one taking the top half and player two or the computer taking the bottom.

You can bump your opponent off the course as both balls are shown on each half if they are close enough.

At the end of a game the bottom half of the screen is given over to a high score display.

The game has been converted from the Commodore 64 and frankly it shows. The Reset key isn't trapped and the Select, Option and Start facilities are done with the joystick or keyboard.

There is a keyboard option and you can have either two joysticks, or one player on joystick and one player on keys. There is no pause game facility.

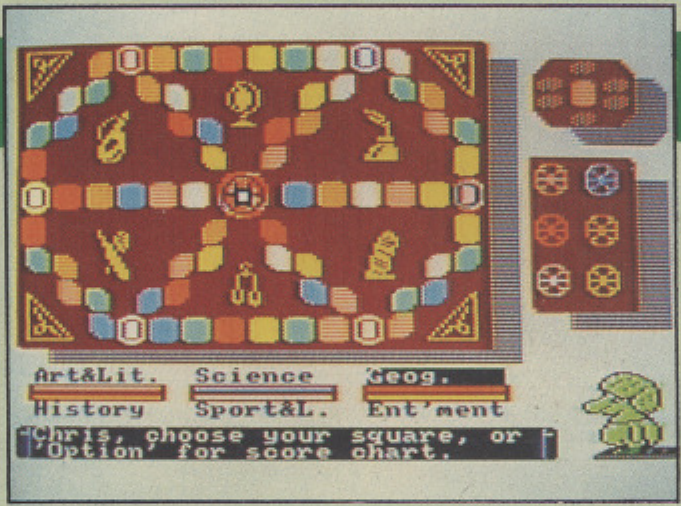
What music there is, is played only between games and is bland, repetitive and tuneless.

The price will prevent Trailblazer becoming a big hit. If it were budget priced it would be worth it, but at just under £10 it pales in comparison with Rescue on Fractalus or Star Raiders II.

Rob Anthony

Sound	5
Graphics	6
Playability	6
Value for money	5
Overall	6

Hot pursuit



Program: Trivial Pursuit
Price: £14.95 (cassette) £19.95 (disc)
Supplier: Domark, 204 Worple Road, London SW20 8PN.
Tel: 01-947 5624

QUIZ games come and go but Trivial Pursuit looks like being here for a long time. Like Monopoly and Scrabble, it's going to be one of those games that is played time after time.

This is not just a straight transposition. While remaining faithful to the original, Domark has used the computer to bring in new features such as sound, making Trivial Pursuit even more fun to play.

The board resembles a spoked wheel around which are spread differently coloured squares, each representing a particular subject or a "throw again" option. The subjects are art & literature, science, geography, history, entertainment and sport.

Spread around the circumference are six wedges, each of which represents one of the subjects.

The aim is to move around the board in any direction, gathering points by answering a question every time you land on a square.

Your turn ends when you answer incorrectly. But the main objective is to collect all of the six wedges, first by landing on them and then correctly answering a question in that particular category.

When all the wedges have been garnered, the player heads for the wheel's hub and once there must correctly answer a final question on a category chosen jointly by the other players to win the game.

The screen displays the board, player's tokens and status, list of categories and a messsage area, plus a funny looking character called TP who will hurl a dart at the board to determine the number of squares the player may move.

Selection of the square is by joystick. When the square has been chosen, the screen changes to show TP's living room and the question appears in a speech bubble.

Some questions involve music or pictures in which case TP will switch on his radio or dim the lights and pull down a projection screen.

A burning candle counts down the time allowed for your answer. All you have to do is to speak it aloud – there's no typing or selection from multiple answers.

More than 3,000 questions are supplied with the program.

Bob Chappell

Sound	8
Graphics	9
Playability	10
Value for money	10
Overall	10

Moon eclipsed



Program: Moonmist
Price: £24.99 (Atari 8 bit or ST disc)
Supplier: Infocom, c/o Activision, 23 Pond Street, Hampstead, London NW3 2PN.
Tel: 01-431 1101

WOE is me! Dress me in mourning! Something has happened that I would not have dreamed possible. I have discovered an Infocom adventure that fails to satisfy.

The cause of my despondency is the ease with which I completed Moonmist. I started the adventure one afternoon and – shock, horror – completed it by teatime.

The plot is very English and concerns funny goings-on at Tresyllian castle.

Apparently a ghost, the White Lady, has started some nightly perambulations and worse, someone has attempted to kill one of the guests.

You play a detective invited there by your female friend, Tamara Lynd. The game commences as you pull up outside the castle gates in your sports car.

Once inside and having met all the guests, you can explore the castle or change for dinner.

The program has a number of nice touches. For example, it lets you choose your own name, including a title. I couldn't resist a unique opportunity to solve the case as Lord Dimwit Flathead.

If you try to arrest somebody too early in the game, you'll be told, "Bad form. Wait until after dinner".

Moonmist is quite enjoyable judged on its own merits, but suffers when compared to practically every other Infocom adventure.

Because of their depth and originality these normally take most players weeks, sometimes months, to unravel and complete. Moonmist, I'm sorry to say, is the glaring exception.

To be scrupulously fair, Moonmist is specifically aimed at adult gamers new to adventures and has deliberately been made simpler than the usual run of Infocom products. As an Infocom veteran it was only natural that I should find Moonmist easy meat.

Then again, Wishbringer (an earlier release) was also a beginner's adventure but for my money offered yards more variety, entertainment, humour and challenge. It also had very little padding, symptoms of which are sadly evident in Moonmist.

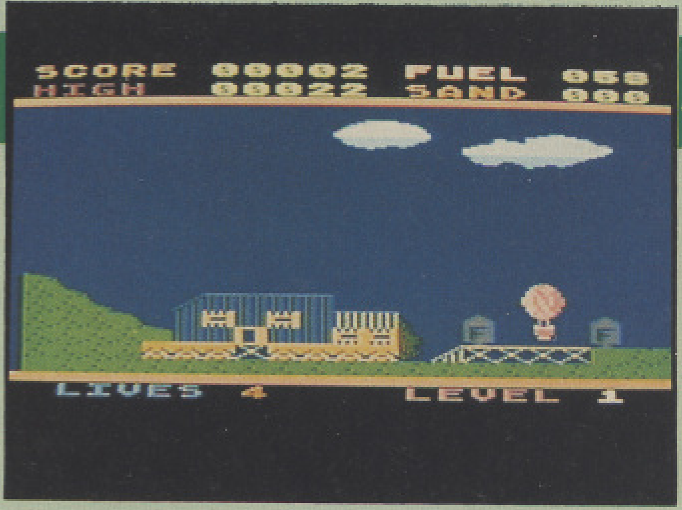
Having said that, Moonmist is still a better adventure than many from other companies. It is also as handsomely packaged, playable and as bug-free as all Infocom adventures.

If you're new to adventures then by all means give it a try. If you're an old hand, then don't get your expectations too high. Perhaps I did.

Brillig

Presentation	*10*
Atmosphere	*8*
Frustration factor	*6*
Value for money	*7*
Overall	*7*

Worth an airing



Program: Up Up & Away
Price: £2.99
Supplier: Bug-Byte, Victory House, Leicester Place, London WC2H 7NB.
Tel: 01-439 0666

THIS game first saw the light of day more than two years ago. It was quite popular then, and although it looks dated compared with current products, it is still worth playing.

If you don't recognise the title as being from an old Frank Ifield song you may not have realised that it's all about hot air ballooning.

No, this isn't a flight simulation, but more of an arcade game.

The idea is to pilot a pink balloon over and past a number of hazards. You may have thought that ballooning was a safe and peaceful pastime – not so in this game.

The wind is always westerly so you get blown from left to right across the screen, the background scrolling smoothly away behind the balloon.

As well as being able to move the balloon from left to right you can also go up by igniting the gas or hurling out sandbags or down (by releasing hot air).

There are refuelling points along the way where you can take on more gas and sand.

The first hazard you'll encounter is a boy throwing stones. If one hits the balloon it will pop and you'll plummet to earth.

More perils lie ahead. White clouds turn black and lightning fills the sky, tearing your balloon to ribbons if a flash strikes it.

Kites need to be dodged and a passing seagull tries to drop something unpleasant on your balloon.

A whirling windmill will suck your craft down if you're not careful and a lunatic aerobatic display flier may cause some discomfort.

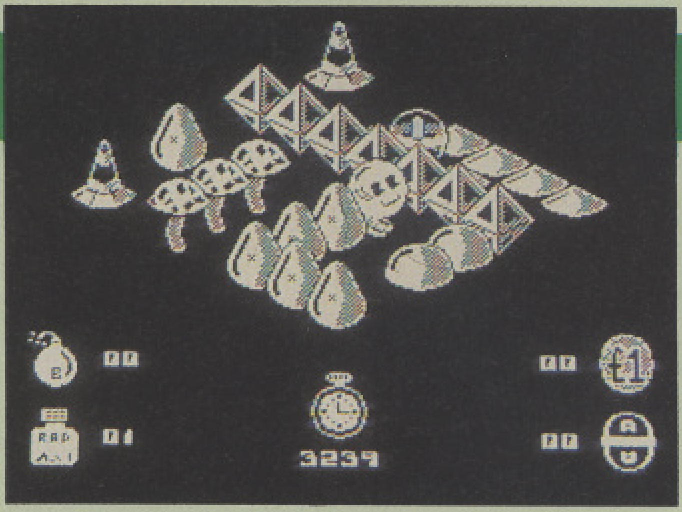
There are four skill levels and a practice mode. The graphics are fairly simple by today's standards and, although there's no music, there are a few sound effects.

Not bad at all, but I would have thought that it could have been priced a fraction lower given its age.

Bob Chappell

Sound	*6*
Graphics	*5*
Playability	*7*
Value for money	*7*
Overall	*7*

Mono moments



Program: Molecule Man
Price: £1.99
Supplier: Mastertronic, 8 Paul Street, London EC2A 4JH.
Tel:01-377 6880

HERE you, the Molecule Man, looking not unlike a Corona bubble having failed its fizzical, are lost in the middle of a 3D maze.

Your goal is to escape via the teleporter, which can be found somewhere within the 256 rooms. However in order to use the teleporter you must collect 16 circuits from around the maze.

At the off, the clock ticks the seconds by and radiation starts gnawing away at you.

Protective pills must be found quickly, or you'll be an ex-bubble inside a minute. They can be bought from dispensers found along the way, using money conveniently lying around on the floor, though often hidden by the blocks of the maze.

Taking the money, you must then locate a dispenser and buy protection. Your protective units increase by 20 for each coin used, up to a maximum of 99.

After you have attained 99 units the dispenser will still take your money, but no further protection is bought.

Bombs can also be bought from similar dispensers and used to blast through some parts of the maze that block your way, but not all.

If you are low on cash you will have to decide whether to spend on explosives or an extra lease of life. Holdings of pills, bombs, coins, circuits and time remaining are shown at the bottom of the screen.

The graphics are nicely drawn, but the game does lose out for not using colour, being drawn in white on a black background. There is a large blank border, meaning that a considerable proportion of the screen remains unused, which was again, a slight annoyance.

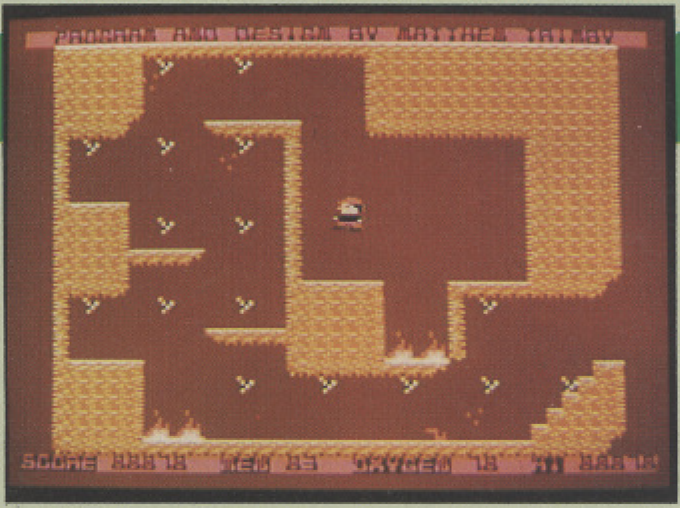
The numbers and positions of any or all of the graphic characters within the game are redefinable, including your starting position. Although editing the maze is easy enough, if a little long winded, it is a worthwhile extra.

I do feel the game could be improved by the use of colour, better use of sound and a more consistent pace to the play. Even so, Molecule Man is still very enjoyable and at under £2, better than many available at five times that price.

Niels Reynolds

Sound	*6*
Graphics	*7*
Playability	*8*
Value for money	*9*
Overall	*8*

Logic unclear



Program: Crystal Raider
Price: £1.99
Supplier: Mastertronic, 8 Paul Street, London EC2A 4JH.
Tel:01-377 6880

THE card insert says this is not an arcade adventure, but a set of logic problems. Well they could have fooled me.

To my mind Crystal Raider is basically a platform game in which you need to collect crystals which give you extra lives.

I think anyone who buys this expecting a set of logic problems may well feel disappointed, although the six screen shots on the card do faithfully portray the game style.

I really can't see why Mastertronic feels the need to imply Crystal Raider is something it isn't for the game is quite able to stand on its own merits.

As platform games go this is a tricky one and you will have to plan your route through the screens carefully, and time your jumps well.

Movements are left, right and jump, the latter being maintained as long as the fire button is held down or until you hit a ceiling.

Throughout the jump your Raider (who more closely resembles a portly navvy than the macho Indianna Jones character on the casssette cover) can be moved left or right, whether moving upwards or downwards, and indeed this extra coordination is necessary to get through many of the screens.

You can select day or night play and opt for solo or duo roles.

The night game is very tricky, as apart from the crystals and nasties, only a small adjacent area is visible, the rest of the screen being jet black.

Selecting dual play, one player controls left and right movement, the other times the jumps, offering an opportunity for ending many a long standing friendship.

The graphics are adequate, though repetitive, with little variation in the rooms apart from layout.

Perhaps recognising this, Mastertronic changes the rooms' background colour each time the Raider expires (through lack of oxygen or contact with a nasty) and for each new room.

On the whole this is a fair variation on the platform theme. If I had paid £10 for Crystal Raider I may have been disappointed, but at £1.99 this is good value for the platform fans.

Niels Reynolds

Sound	*7*
Graphics	*5*
Playability	*8*
Value for money	*8*
Overall	*7*

Quality adventure



Program: Rick Hanson
Price: £14.95 (disc)
Supplier: Robico Software, 3 Fairland Close, Llantrisant, Mid Glamorgan CF7 8HQ.
Tel: 0443 227354

GENERAL Garantz is threatening to nuke the world if we don't give in to his demands. And that's why I'm standing at this deserted railway station, awaiting further instructions.

Rick Hanson's the name, and I guess you could call me a special agent.

I'm a tough, no-nonsense detective with a gritty determination and nerves of steel (but I just hate spiders!)

I've sniffed around a few text adventures in my time, including the disc-only type which is what this is, so you could say I know what I'm talking about.

And what I'm talking about is quality with a capital Q which is what this one has in spades.

Sure, there's plenty of locations, the parser's ace, the response time is fast and the puzzles are neat – but that don't necessarily make it the bee's knees in my book.

Where it brings home the bacon is in the quantity, detail and atmosphere of the descriptions. No threadbare one-liners from Robico – what they give is nothing less than fulsome and relevant prose coupled with a slick smatter of humour.

So there I was at the station. Being Rick Hanson, my first thought was to snoop around outside the entrance to see if I'd been followed. I had.

A suspicious character dodged behind a parked car, and then somewhere above, a window broke.

In the time it took to look up, there was the crack of gunfire and a bullet ripped through my chest, hurling me to the floor.

Some you win, some you lose. I restarted and this time began exploring the station. I found a tape recorder which told me to get my tail over to the inn in the next village where I would be contacted further about my mission, which was to asssassinate Garantz.

The recorder self-destructed – the Chief thinks of everything. Pity I was holding it at the time. This was not turning out to be my lucky day.

Once more into the breach, I just had to find some way out of this station. A goods train passing under the bridge offered distinct possibilities and apart from a fracas with the guard, I had no more trouble until I reached the village outskirts.

There was plenty to explore here and it seemed my task had barely begun.

One final interesting point, I've never before been sent on an assignment where one of the ways you can get yourself killed is by sneezing yourself to death!

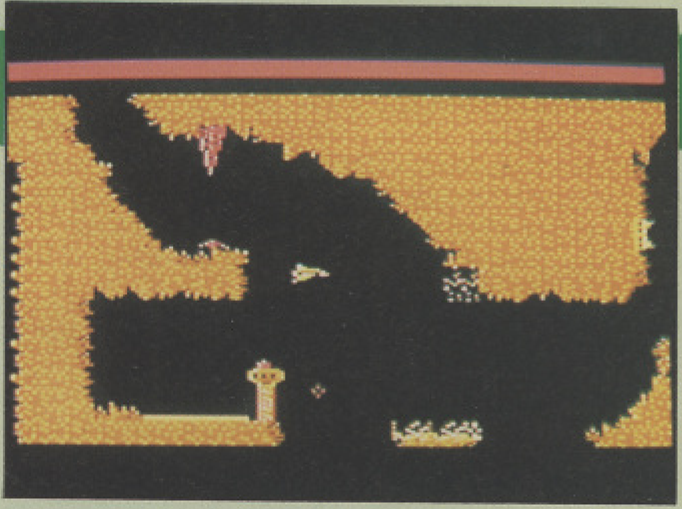
Robico promises two more Rick Hanson adventures in the future. They'd better hurry up or I might just have to visit them with a small helping of knuckle pie.

This is one wowser of an adventure, so good that Level 9 had better hold tight to its laurels. Here's looking at you, kid.

Bob Chappell

Presentation	9
Atmosphere	9
Playability	9
Value for money	9
Overall	9

Kamikaze caverns



Program: Caverns of Eriban
Price: £2.99
Publisher: Firebird, Wellington House, Upper St Martin's Lane, London WC2H 9DL
Tel: 01-379 6755

THE object of this game is to refuel a whole series of underground mining installations using supplies obtained from surface supply stations.

However this task is not as easy as it first appears, since each mine is protected by vicious defences which include falling water droplets, kamikaze space ships and fireballs.

Further difficulties are placed in your path in that your ship has limited fuel which must be replenished on the surface.

Your manouevring has to be very precise since being a mere one pixel out can cause the destruction of your ship.

You can carry up to five supply loads and each surface supply station holds only this number. Each mine needs a load, indicating this by a flashing beacon. To either leave or collect supplies, you must land on the yellow landing strip that forms part of every mine and supply station.

A strange sort of pseudo-gravity affects your steering, causing numerous crashes against the sides of the caverns. On later levels reverse gravity appears, making manouevring even more difficult.

Fortunately you are given seven ships to play with, as it is very easy to lose them.

The graphics are well drawn, but when moving at speed through the caverns the scrolling is slow and jerky.

An interesting budget game let down by overly difficult play.

Stephen Foster

Sound	3
Graphics	7
Playability	5
Value for money	7
Overall	6

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For sale

PEOPLE at the Ford Motor Company have discovered a new "showroom" for selling their cars – MicroLink.

Bob Hancox, a process engineer at Ford's Dagenham plant, used MicroLink to advertise his own Y registration Fiesta when he recently moved to a job which qualified him for a company car.

He knows all about the system's speed and efficiency through his regular telex and telemessage contacts with other engineers in the US and Europe.

And Bob is also familiar with MicroLink's ability to reach a wide audience, having previously used the bulletin board to successfully advertise a music centre and a camera.

After swiftly disposing of the £3,700 diamond white Fiesta XR2, Bob said: "MicroLink is the best system of its kind without a doubt".

Computers, comms and the clergy

CHURCH of Scotland minister Martin McKean's days are spent in the quiet old market town of Cumnock in the farming county of Ayrshire, an area which hasn't seen much excitement since the days of the Covenanters.

But in the evenings the world is his playground thanks to MicroLink.

"Computing has been my hobby and relaxation since schooldays", he said. "MicroLink lets me see what's going on elsewhere in the field of computer communications".

Martin has already had a good browse around the giant American database Mnematics which was coupled to the MicroLink system recently.

"I was disappointed at not finding a section on religion – it seemed to cover just about everything else", he said.

"I'd like to see a section on MicroLink for clergymen like myself to share news, views and ideas for sermons – and to discuss our shared interests in computers and communications.

"I am already communicating regularly with a Roman Catholic priest in Manchester via MicroLink and I'd be delighted to hear from other clergy on MAG 30319".

TELEX FOR KIPPERS

FOR five years the Shetland Smokehouse on the island of Skeld has been supplying salmon, Shetland lamb, silver eel – and of course kippers – to a mainly local market.

But a recent major expansion has boosted production, which means there's quantity as well as quality now to meet demand from the mainland.

Managing director David Hammond said: "As an expanding business entering new markets we have to be competitive.

"In business you have to get things down in black and white or risk making mistakes – the telephone just won't do.

"Letters take about five days and it's extremely difficult to get a dedicated telex line installed in an isolated place like Skeld.

"But with MicroLink we have immediate access to telex links with our clients and, as a bonus, an entry to all kinds of fascinating databases which could be useful for marketing purposes".

Shop electronic

MICROLINK has started yet another great consumer service for home computer owners.

Shop Window is Britain's latest, and could become the biggest, computerised shopping service – a convenient 24 hours a day, seven days a week electronic emporium.

It provides the opportunity to do your shopping without leaving the comfort of your fireside.

And while other teleshopping services restrict themselves to a limited range of products like groceries or household goods, there are no such constraints on Shop Window.

Although its initial catalogue of companies is mainly concerned with computer products it will grow to eventually include all manner of goods and services on a nationwide basis.

There are even classified "exchange and mart" type sections for bargain hunters.

And its motto from day one has been: "Top brands at lowest-ever prices".

On the road

AS RAC services manager for Yorkshire, Danny Finney covers the organisation's biggest geographical area – North Humberside, South and West and North Yorks and Cleveland.

His department is responsible for road patrols, directional and warning signs, motorway service centres, the RAC base garage and emergency control room.

Naturally he can use all the help he can get, which is where MicroLink comes in. Danny is using the system's electronic mail facility to tell Yorkshire folk all about the RAC's famous road sign service for special events.

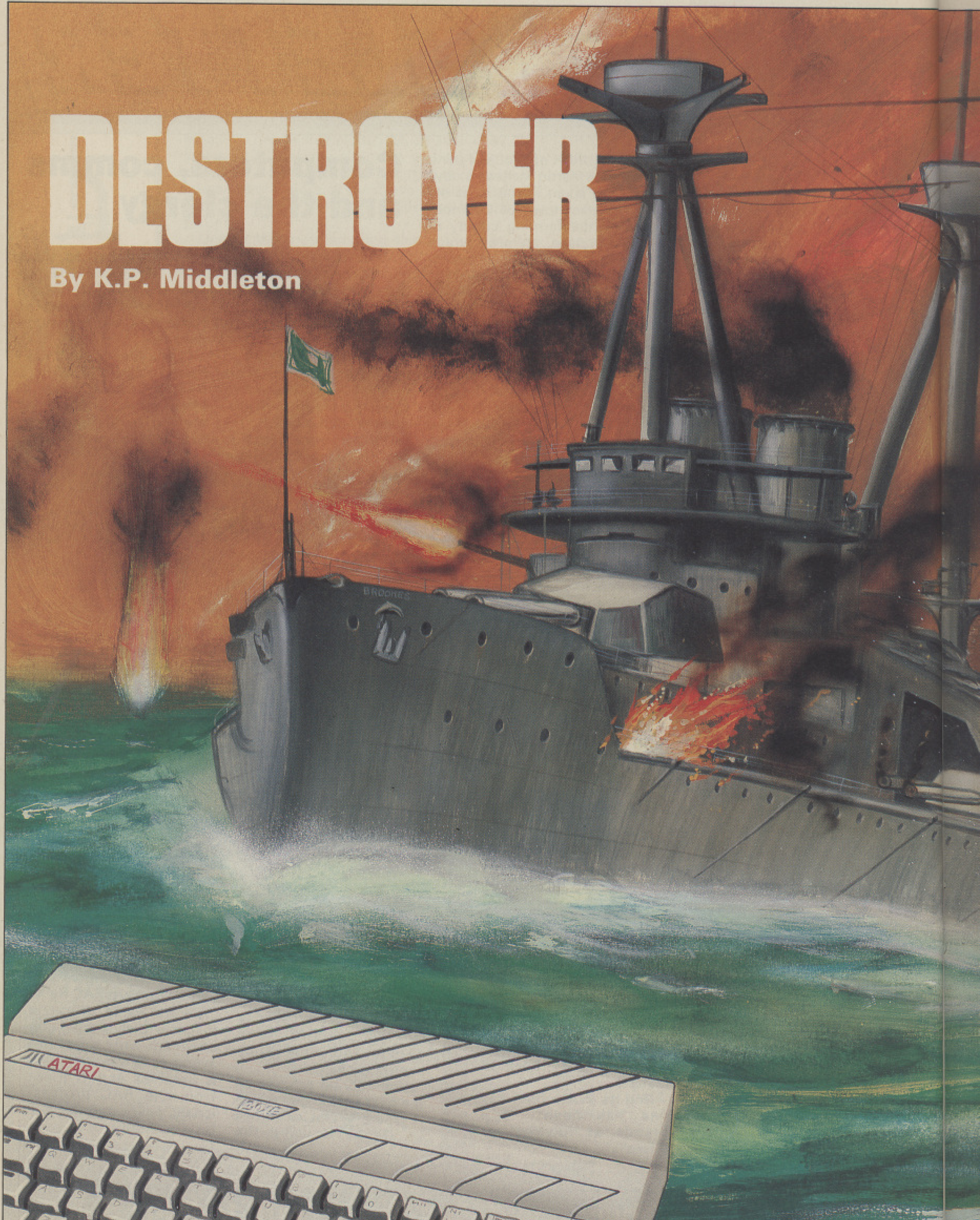
These are the familiar blue-and-white pointers to the best routes for getting to and from everything, from the local church fete to the Lombard RAC Rally.

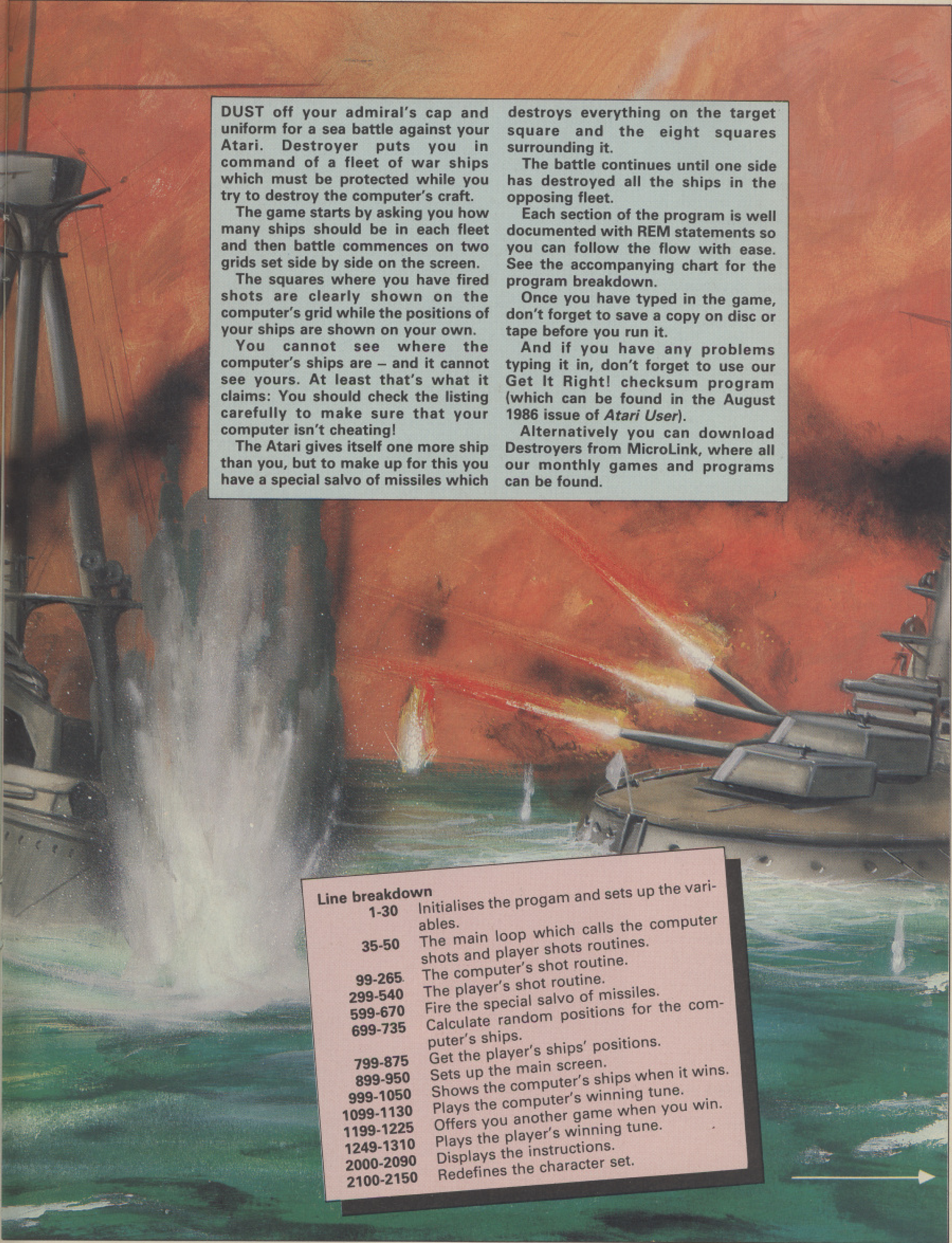
Danny wants everyone to know that signposting an event only costs on average £72 – even though it involves expert input from the RAC professionals, police and relevant local authority.

YOUR chance to join MicroLink – turn to Page 8

DESTROYER

By K.P. Middleton





DUST off your admiral's cap and uniform for a sea battle against your Atari. Destroyer puts you in command of a fleet of war ships which must be protected while you try to destroy the computer's craft.

The game starts by asking you how many ships should be in each fleet and then battle commences on two grids set side by side on the screen.

The squares where you have fired shots are clearly shown on the computer's grid while the positions of your ships are shown on your own.

You cannot see where the computer's ships are – and it cannot see yours. At least that's what it claims: You should check the listing carefully to make sure that your computer isn't cheating!

The Atari gives itself one more ship than you, but to make up for this you have a special salvo of missiles which destroys everything on the target square and the eight squares surrounding it.

The battle continues until one side has destroyed all the ships in the opposing fleet.

Each section of the program is well documented with REM statements so you can follow the flow with ease. See the accompanying chart for the program breakdown.

Once you have typed in the game, don't forget to save a copy on disc or tape before you run it.

And if you have any problems typing it in, don't forget to use our Get It Right! checksum program (which can be found in the August 1986 issue of *Atari User*).

Alternatively you can download Destroyers from MicroLink, where all our monthly games and programs can be found.

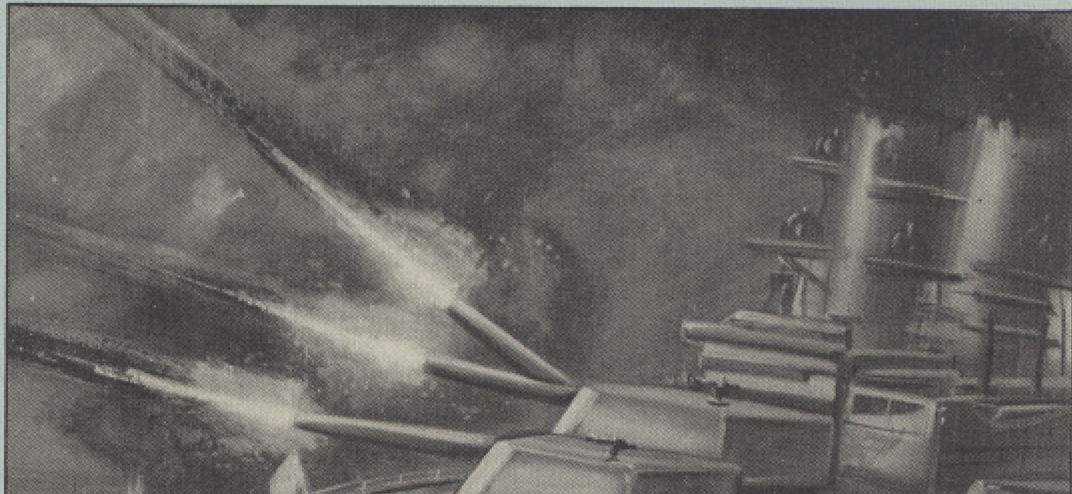
Line breakdown

1-30	Initialises the progam and sets up the variables.
35-50	The main loop which calls the computer shots and player shots routines.
99-265	The computer's shot routine.
299-540	The player's shot routine.
599-670	Fire the special salvo of missiles.
699-735	Calculate random positions for the computer's ships.
799-875	Get the player's ships' positions.
899-950	Sets up the main screen.
999-1050	Shows the computer's ships when it wins.
1099-1130	Plays the computer's winning tune.
1199-1225	Offers you another game when you win.
1249-1310	Plays the player's winning tune.
2000-2090	Displays the instructions.
2100-2150	Redefines the character set.

```
1 REM ******************
2 REM *   DESTROYERS   *
3 REM *       by       *
4 REM * K.P.Middleton. *
5 REM *      for       *
6 REM *   ATARI USER   *
7 REM *    (c) 1987    *
8 REM ******************
9 REM
10 GOSUB 2000:REM ** INITIALIZE **
15 GRAPHICS 17:SETCOLOR 0,7,10:SETCOLO
R 1,13,10:SETCOLOR 2,7,2:SETCOLOR 3,3,
4:SETCOLOR 4,7,2
20 POKE 756,PEEK(106):POKE 16,64:POKE
53774,64
25 SV=1:SH=0:HP=0:HC=0:DL=PEEK(560)+25
6*PEEK(561)
30 GOSUB 900:GOSUB 800:GOSUB 700
35 REM *** MAIN LOOP ***
40 GOSUB 100:REM ** COMPUTERS SHOT **
45 GOSUB 300:REM ** PLAYERS SHOT **
50 GOTO 40
99 REM *** COMPUTERS SHOT ***
100 X=INT(RND(0)*9)+65:Y=INT(RND(0)*9)
+1
105 CSX=X-54:CSY=Y+8:LOCATE CSX,CSY,Z
110 IF Z=88 OR Z=250 THEN GOTO 100
115 POSITION 0,4:? #6;"FIRING MISSILE.
.."
120 FOR N=0 TO 255:SOUND 0,N,14,6:NEXT
 N:SOUND 0,0,0,0
125 IF Z=122 THEN GOSUB 200:REM HIT
130 IF Z=81 THEN GOSUB 250:REM MISS
135 POSITION 0,4:? #6;"MY SHOT...";CHR
$(X);",";CHR$(Y+48);"      "
140 FOR N=1 TO 500:NEXT N:POSITION 0,4
:? #6;BL$
145 RETURN
200 POSITION 0,4:? #6;"HIT !!!
    "
205 POSITION CSX,CSY:? #6;CHR$(250)
210 FOR N=6 TO 28:POKE DL+N,38:NEXT N
215 FOR N=15 TO 0 STEP -1:FOR NN=0 TO
14:SOUND 0,70,0,N:SOUND 1,150,1,N:POKE
 54277,NN:NEXT NN
220 FOR NN=14 TO 0 STEP -1:POKE 54277,
NN:NEXT NN:NEXT N
225 HC=HC+1:IF HC=NP THEN POP :POP :GO
TO 1000
230 RETURN
250 POSITION 0,4:? #6;"MISSED...
    "
255 POSITION CSX,CSY:? #6;CHR$(88)
260 FOR N=100 TO 0 STEP -1:SOUND 0,1,0
,INT(N/10):SOUND 1,5,8,INT(N/10):NEXT
N
265 RETURN
299 REM *** PLAYERS SHOT ***
300 POSITION 0,4:? #6;"YOUR SHOT...
    ":POSITION 12,4
305 CLOSE #1:OPEN #1,4,0,"K:"
310 GET #1,X:IF X<65 OR X>73 THEN 310
315 ? #6;CHR$(X);",";
320 GET #1,Y:IF Y=126 THEN GOTO 300
325 IF Y<49 OR Y>57 THEN 320
330 ? #6;CHR$(Y);
335 GET #1,Z:IF Z=155 THEN GOTO 350
340 IF Z=83 AND SV=1 THEN GOTO 600
345 IF Z=126 THEN GOTO 300
350 POSITION 0,4:? #6;"FIRING MISSILE.
..    ":FOR N=0 TO 255:SOUND 0,N,14,6:N
EXT N:SOUND 0,0,0,0
355 FOR N=1 TO NC:IF X=XC(N) AND Y-48=
YC(N) THEN POP :GOTO 500:REM HIT
360 NEXT N
365 POSITION 0,4:? #6;"MISSED...
    ":XP=X-64:YP=Y-40
370 LOCATE XP,YP,Z:IF Z<>81 THEN SH=SH
+1:POSITION 8,20:? #6;SH:FOR N=1 TO 30
0:NEXT N:RETURN
375 POSITION XP,YP:? #6;CHR$(88)
380 FOR N=100 TO 0 STEP -1:SOUND 0,1,0
,INT(N/10):SOUND 1,5,8,INT(N/10):NEXT
N
385 SH=SH+1:POSITION 8,20:? #6;SH
390 RETURN
400 LOCATE XP-64,YP+8,Z:IF Z<>81 THEN
FOR L=1 TO 300:NEXT L:RETURN
405 POSITION 0,4:? #6;"HIT !!!
    ":POSITION XP-64,YP+8:? #6;CHR$(2
50)
410 FOR H=6 TO 28:POKE DL+H,38:NEXT H
415 FOR F=15 TO 0 STEP -1:FOR L=0 TO 1
4:SOUND 0,70,0,F:SOUND 1,150,1,F:POKE
54277,L:NEXT L
420 FOR L=14 TO 0 STEP -1:POKE 54277,L
:NEXT L:NEXT F
425 HP=HP+1:POSITION 17,20:? #6;HP
430 IF HP=NC THEN POP :POP :GOTO 1200
435 RETURN
500 LOCATE X-64,Y-40,Z:IF Z<>81 THEN F
OR N=1 TO 300:NEXT N:RETURN
505 POSITION 0,4:? #6;"HIT !!!
    "
510 POSITION X-64,Y-40:? #6;CHR$(250)
515 FOR H=6 TO 28:POKE DL+H,38:NEXT H
520 FOR N=15 TO 0 STEP -1:FOR NN=0 TO
14:SOUND 0,70,0,N:SOUND 1,150,1,N:POKE
 54277,NN:NEXT NN
525 FOR NN=14 TO 0 STEP -1:POKE 54277,
NN:NEXT NN:NEXT N
530 SH=SH+1:POSITION 8,20:? #6;SH:HP=H
P+1:IF HP=NC THEN POP :GOTO 1200
535 POSITION 17,20:? #6;HP
540 RETURN
599 REM *** SALVO ***
600 IF X<66 OR X>72 OR Y<50 OR Y>56 TH
EN GOTO 300
605 FOR N=0 TO 255:SOUND 0,N,14,6:NEXT
 N:SOUND 0,0,0,0
610 FOR YP=Y-49 TO Y-47
615 FOR XP=X-1 TO X+1
620 FOR N=1 TO NC:IF XP=XC(N) AND YP=Y
C(N) THEN GOSUB 400:REM HIT
625 NEXT N
630 LOCATE XP-64,YP+8,Z:IF Z<>81 THEN
GOTO 650
635 POSITION 0,4:? #6;"MISSED...
    "
640 POSITION XP-64,YP+8:? #6;CHR$(88)
645 FOR N=100 TO 0 STEP -1:SOUND 0,1,0
,INT(N/10):SOUND 1,5,8,INT(N/10):NEXT
N:SOUND 0,0,0,0
650 SH=SH+1:POSITION 8,20:? #6;SH
655 NEXT XP
660 NEXT YP
665 SV=0:POSITION 13,22:? #6;SV
```



```
670 RETURN
699 REM *** COMPUTERS POSITIONS ***
700 NC=NP+1
705 FOR N=1 TO NC:XC(N)=INT(RND(0)*9)+
65:YC(N)=INT(RND(0)*9)+1:NEXT N
710 FOR N=1 TO NC
715 FOR L=N+1 TO NC:IF L>NC THEN L=NC:
GOTO 725
720 IF XC(N)=XC(L) AND YC(N)=YC(L) THE
N POP :POP :GOTO 705
725 NEXT L
730 NEXT N
735 RETURN
799 REM *** PLAYERS POSITIONS ***
800 POSITION 0,4:? #6;BL$;BL$
805 FOR N=1 TO NP:POSITION 0,4:? #6;"P
OSITION OF SHIP #";N
```



```
810 POSITION 0,5:CLOSE #1:OPEN #1,4,0,"K:"
815 GET #1,X:IF X<65 OR X>73 THEN 810
820 ? #6;CHR$(X);",";
825 GET #1,Y:IF Y=126 THEN POSITION 0,5:? #6;"  ":GOTO 810
830 IF Y<49 OR Y>57 THEN 825
835 ? #6;CHR$(Y)
840 GET #1,Z:IF Z=126 THEN POSITION 0,5:? #6;"  ":GOTO 810
845 IF Z<>155 THEN 840
850 LOCATE X-54,Y-40,Z:IF Z<>81 THEN 840
855 POSITION X-54,Y-40:? #6;CHR$(122)
860 POSITION 0,5:? #6;"    "
865 NEXT N
870 POSITION 0,4:? #6;BL$
875 RETURN
899 REM *** SET UP SCREEN ***
900 ? #6;CHR$(125):POSITION 5,1:? #6;"destroyers":POSITION 1,8:? #6;"ABCDEFGHI ABCDEFGHI"
905 CLOSE #1:OPEN #1,4,0,"K:"
910 FOR N=9 TO 17:POSITION 0,N:? #6;N-8;"QQQQQQQQQ";N-8;"QQQQQQQQQ":NEXT N
915 POSITION 2,20:? #6;"shots=0   hits=0":POSITION 7,22:? #6;"salvo=1"
920 POSITION 0,4:? #6;"ENTER NO. OF SHIPS  (1-8)..."
925 GET #1,NP:IF NP<49 OR NP>56 THEN 925
930 POSITION 8,5:? #6;CHR$(NP)
935 GET #1,Z:IF Z=126 THEN POSITION 8,5:? #6;" ":GOTO 925
940 IF Z<>155 THEN 935
945 NP=NP-48
950 RETURN
999 REM *** COMPUTER WINS ***
1000 POSITION 0,4:? #6;"I'VE WON !!!      ":GOSUB 1100
1005 POSITION 0,5:? #6;"HERE ARE MY SHIPS..."
1010 FOR N=1 TO NC
1015 LOCATE XC(N)-64,YC(N)+8,Z:IF Z=250 THEN 1025
1020 POSITION XC(N)-64,YC(N)+8:? #6;CHR$(122)
1025 NEXT N
1030 FOR N=1 TO 1000:NEXT N
1035 POSITION 0,5:? #6;"ANOTHER GAME? (Y/N) ":GET #1,Z
1040 IF Z=89 THEN GOTO 15
1045 IF Z<>78 THEN 1035
1050 END
1099 REM *** COMPUTER WIN TUNE ***
1100 RESTORE 1130
1105 READ N,D:IF N=0 THEN SOUND 0,0,0,0:SOUND 1,0,0,0:RETURN
1110 SOUND 0,N,10,7:SOUND 1,N+1,10,7
1115 FOR F=1 TO D:NEXT F
1120 SOUND 0,0,0,0:SOUND 1,0,0,0
1125 GOTO 1105
1130 DATA 200,75,200,50,200,25,200,75,170,50,180,25,180,50,200,25,200,50,210,25,200,100,0,0
1199 REM *** PLAYER WIN ***
1200 POSITION 17,20:? #6;HP
1205 POSITION 0,4:? #6;"YOU'VE WON !!!      ":GOSUB 1250
1210 POSITION 0,5:? #6;"ANOTHER GAME? (Y/N) ":GET #1,Z
1215 IF Z=89 THEN GOTO 15
1220 IF Z<>78 THEN 1210
1225 END
1249 REM *** PLAYER WIN TUNE ***
1250 RESTORE 1300
1255 READ N,D:IF N=999 THEN RETURN
1260 SOUND 0,N,10,10:SOUND 1,N+1,10,10
1265 FOR F=1 TO D:NEXT F
1270 SOUND 0,0,0,0:SOUND 1,0,0,0
1275 GOTO 1255
1300 DATA 180,75,180,25,170,25,170,25,0,25,180,25,170,38,180,12,198,25,220,25,232,100
1305 DATA 150,50,166,50,180,10,220,10,166,10,198,10,150,25,166,25,180,50,198,50,221,100
1310 DATA 999,0
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	1114	2	1422	3	1109
4	1727	5	1185	6	1354
7	1127	8	1114	9	307
10	2039	15	5928	20	2683
25	2960	30	1942	35	2462
40	2304	45	2135	50	498
99	3534	100	2283	105	2400
110	1945	115	2468	120	3206
125	2460	130	2636	135	3694
140	2818	145	565	200	2137
205	2097	210	2217	215	5725
220	3425	225	2740	230	565
250	2270	255	2056	260	4644
265	565	299	3113	300	3364
305	1511	310	2088	315	982
320	1993	325	1540	330	801
335	2002	340	1972	345	1436
350	5807	355	4763	360	479
365	3365	370	5977	375	1910
380	4644	385	1958	390	565
400	4254	405	4348	410	2199
415	5449	420	3169	425	1998
430	2230	435	565	500	4140
505	2103	510	2100	515	2199
520	5725	525	3425	530	4408
535	1458	540	565	599	1688
600	2896	605	3206	610	1296
615	1164	620	4496	625	479
630	2812	635	2270	640	2175
645	5492	650	1958	655	572
660	573	665	1824	670	565
699	4583	700	509	705	4191
710	895	715	2826	720	3549
725	477	730	479	735	565
799	4162	800	1629	805	3619
810	2414	815	2093	820	982
825	3401	830	1550	835	738
840	3403	345	1152	850	2335
855	2097	860	1410	865	479
870	1379	875	565	899	3261
900	5874	905	1511	910	4839
915	4713	920	3005	925	2321
930	1721	935	3385	940	1157
945	587	950	565	999	3324
1000	2957	1005	2627	1010	895
1015	2798	1020	2525	1025	479
1030	1456	1035	3154	1040	1346
1045	1153	1050	294	1099	4115
1100	845	1105	3620	1110	1946
1115	1309	1120	1670	1125	606
1130	4516	1199	2685	1200	1458
1205	3079	1210	3154	1215	1346
1220	1148	1225	294	1249	3688
1250	844	1255	2051	1260	2037
1265	1309	1270	1670	1275	612
1300	4268	1305	4357	1310	640
2000	2470	2005	4303	2010	4664
2015	1911	2020	7918	2025	7540
2030	7430	2035	8321	2040	6112
2041	7438	2042	1604	2043	4848
2045	7204	2050	6841	2055	9870
2060	7083	2065	8123	2070	5106
2075	7674	2080	7734	2085	7186
2090	764	2100	2554	2110	3360
2115	851	2120	4859	2125	5057
2130	4860	2135	4119	2140	6638
2145	1608	2150	1359		

```
2000 DIM XC(9),YC(9),BL$(20):BL$="                    "
2005 POKE 82,0:POKE 106,PEEK(106)-4:GRAPHICS 0:SETCOLOR 2,7,2:POKE 752,1
2010 ? :? "            DESTROYERS                by"
2015 ? "          K.P.Middleton "
2020 ? :? :? "    The object of the game is to sink   all the computers ships before all yours";
2025 ? "have been sunk. This is not as easy as  it sounds because the computer always"
2030 ? "has one more ship than you have and it  will never fire in the same position"
2035 ? "twice.":? :? "    To make up for this, you have a     salvo which means you can fire a cluster";
2040 ? "of 9 shots at once, but you can only usethis once in any game.":?
2041 ? :? "    PRESS ANY KEY FOR INSTRUCTIONS":POKE 764,255
2042 IF PEEK(764)=255 THEN 2042
2043 ? CHR$(125):POSITION 13,0:? " INSTRUCTIONS ":?
2045 ? "    When the game starts, you will be   asked how many ships you want in this"
2050 ? "game. You can choose from 1 to 8, but   remember, whatever you choose the"
2055 ? "computer has one more.":? :? "    Next you must position your ships onthe grid. To do this simply press a "
2060 ? "letter, then a number and press RETURN. A ship will be placed in the chosen"
2065 ? "position and you are then asked to placeyour next ship. When you have positioned";
2070 ? "all your ships the computer will start  the game.":?
2075 ? "    To fire you use the same method as  positioning your ships. To use the salvo";
2080 ? "press 'S' instead of RETURN. 9 shots arefired centred around your co-ordinates.":?
2085 ? "    PLEASE WAIT, REDEFINING CHARACTERS";
2090 POKE 764,255
2100 CSET=PEEK(756)*256:RAMSET=256*PEEK(106)
2110 FOR N=0 TO 1023:POKE RAMSET+N,PEEK(CSET+N):NEXT N
2115 RESTORE 2135
2120 Z=49*8+RAMSET:FOR N=0 TO 7:READ D:POKE Z+N,D:NEXT N:REM WAVES
2125 Z=56*8+RAMSET:FOR N=0 TO 7:READ D:POKE Z+N,D:NEXT N:REM SPLASH
2130 Z=58*8+RAMSET:FOR N=0 TO 7:READ D:POKE Z+N,D:NEXT N:REM SHIPS
2135 DATA 48,72,132,3,48,72,132,3,40.18,84,109,170,187,126,0,0,0,68,78,255,126,0,0
2140 ? CHR$(156);"          PRESS ANY KEY TO START        ";:POKE 764,255
2145 IF PEEK(764)=255 THEN 2145
2150 POKE 764,255:RETURN
```

TO ORDER TURN TO THE FORM ON PAGE 49

KNOW YOUR NYBBLES . . .

AS an aid to those of you who are new to computing or *Atari User*, we have collected together explanations of some of the terms which we often use in the magazine.

A

Ascii: Stands for American Standard Code for Information Interchange. It is a way of representing letters and digits inside the computer. Atari's own brand of Ascii for the 8 bit range is called Atari Ascii or ATAscii.
ANTIC: The name of the 8 bit Atari graphics chip which generates display list interrupts.
Assembler: A program which translates assembly language instructions into machine code.

B

Bank switching: The method used on the 800XL and 130XE to switch in and out various banks of memory so that the CPU can have access to more memory than it would normally be able to handle.
Basic: Beginners All Purpose Symbolic Instruction Code is the computer language which comes with your Atari. It is one of the easiest to learn.
Bit: Another name for a binary digit. One digit in binary can hold either a one or a zero.
Bug: A small error in a program which causes it to crash or work incorrectly.
Byte: Made up of eight bits.

C

Cassette: Stores programs and data from your Atari. It is far slower than a disc.
Chip: An integrated circuit which can hold information or control some of the operation of your computer.
Compiler: Turns a program written in a language such as Basic into machine code.
CPU: The Central Processing Unit is the main chip inside of a computer which is responsible for its computing capabilities such as mathematics and decision making.
Crash: Your Atari may crash when it encounters a bug in a program. A crash might fill the screen with gibberish or freeze the keyboard. Crashes can always be cured by turning the computer off and then on again.
Cursor: The small square on the screen which you move using the arrow keys.

D

Data: Information that the computer operates on.
Debug: To remove the bugs from a program.
DLI: Display List Interrupts enable you to design the way that your Atari builds its display screen. Using DLIs it is possible to have up to 256 colours on the screen at once and to mix screen resolutions.
DOS: The computer's Disc Operating System which allows the use of commands to manipulate data stored on the disc.
Download: When you download a program you receive that program via a cable or telephone line from another computer.

E

Eight bit: When we refer to the older Ataris , such as the 800XL, as 8 bit computers we mean that the largest amount of memory that they can move in one operation is eight bits, or one byte.

F

Floppy disc: A flat piece of magnetic media on which programs and data can be stored using a disc drive. Discs are far faster than cassettes and can hold more information.

G

Get It Right!: When you type in a listing from the pages of *Atari User*, you will find a strange looking table of numbers next to the listing. This table is produced by our checksum program Get It Right!. A checksum is the sum of all the characters in a line of program.

When you have finished typing in a listing you pass it through Get It Right! and it produces a checksum table. You then check each entry in the table against the one in the magazine, and if it matches, you have typed that line in correctly.

Any difference in the sums and the line is incorrect and must be retyped. Get It Right! was last published in the August 1986 issue of *Atari User*.
Graphics mode: A method of describing how a screen is displayed. A change in graphics mode might affect character size, the resolution or the number of colours available.
GTIA: The Graphics Television Interface Adapter is a chip which controls graphic modes 9, 10 and 11 and Player Missile Graphics.

H

Hard disc: A sealed disc drive which is free from dust and is far faster and can hold much more information than a floppy disc.
Hex: Short for hexadecimal which refers to numbers in base 16.

I

I/O: An abbreviation for Input/Output which refers to the exchange of information between the computer and its peripherals.

K

Kilobyte: Often written as k, a kilobyte is 1024 bytes of memory.

L

Language: Computers can be programmed in a variety of languages including Basic, Pascal, Forth and machine code.

M

Machine code: The computer's natural language and the one that it runs fastest.
Megabyte: A megabyte is made up of 1024k or 1,048,576 bytes of memory.
Modem: Short for MODulate/DEModulate. A modem is a small box which allows you to attach your Atari to the phone lines to communicate with distant information services such as MicroLink and bulletin boards.
Monitor: A monitor is a high quality display screen for your Atari.

N

Nybble: A nybble is made up of four bits or half a byte.

P

Parallel: A method of transferring

data between a computer and a peripheral in which data is sent along several wires so that entire bytes can be transmitted together rather than one bit at a time.

Peripheral: An external device which plugs into the computer. Peripherals include disc drives, printers and modems.

PIA: The chip responsible for control of joysticks and bank switching on XLs and XEs.

Pixel: One dot on the screen.

Player/Missile Graphics: Atari's own version of sprites — special graphics shapes which can be moved around the screen quickly and smoothly.

POKEY: This chip handles serial input and output and the sound channels.

Port: A name for the socket into which you plug peripherals.

Printer: A peripheral which prints out program listings and documents on to paper.

Program: A set of instructions for the Atari to perform.

R

Return-Key mode: Automates the Atari's program editor so that you don't have to press Return at the end of every line.

Rom: Read Only Memory is the type of memory which stores the programs which allow your Atari to function. When you enter a Basic line or press a cursor key, programs interpret what you are doing and control the Atari.

These are the programs which are stored in rom. Although you can look at the contents of rom you cannot alter it – hence its name. The information stored in rom is permanent and is not lost when the computer's power is turned off.

Ram: Random Access Memory is the part of your Atari's memory which stores your programs and their data. You can not only look at the contents of this memory, but alter them as well.

Ram is called random access because you can look anywhere in ram and don't have to start at the beginning. The contents of ram are lost when you turn off your Atari.

Resolution: A method of describing the number of pixels on the screen. A resolution of 320 by 200 means a screen made up of 320 pixels horizontally and 200 pixels vertically.

68000: The 16 bit CPU inside the ST models.

6502: The 8 bit CPU which controls the older Atari models such as the 800XL and 130XE.

16 bit: We often refer to the STs as being 16 bit computers. This means that the largest amount of memory that they can move in one operation is 16 bits, or two bytes.

S

Serial: A method of communication between the computer and a peripheral in which bits are sent one at a time down a wire.

Statement: A single computer instruction.

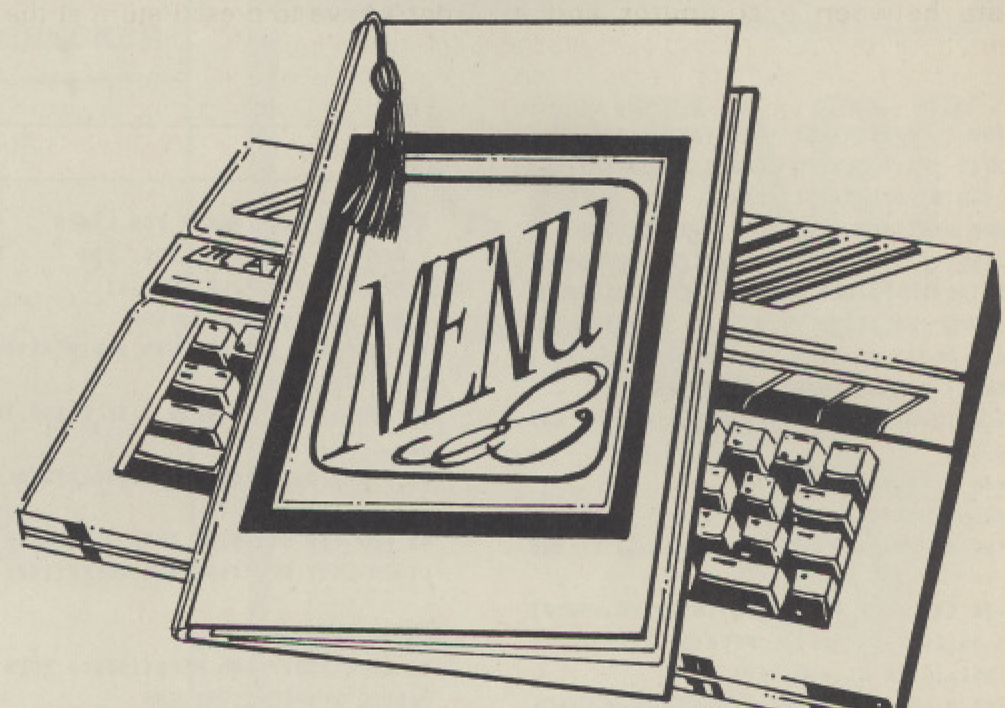
T

Touch tablet: Also called a graphics tablet, this is a device which allows you to input information, such as sketches, into drawing programs.

U

Upload: When you upload text or a program, you send that text or program via a cable or telephone line to another computer. ■

MENU MAKER



MARK COCKER presents a versatile utility that will banish all those long loading commands

IF you're tired of typing in all those long commands to load and run your favourite Basic or machine code programs then this is the utility for you!

File Menu II is an autorun menu for your discs. A menu of the programs on the disc is shown and you make your choice with the joystick, keyboard or by using the Option, Select and Start keys.

It can automatically load three different types of files – saved Basic, listed Basic and machine code – thus making it one of the most versatile menu programs available.

The program detects which type of file is being loaded by reading in the first two bytes of the file before loading it.

If these two numbers are both 255, then File Menu II opens the file and calls Dos vector 5576 using the USR function, and then disables Basic.

If the two numbers are anything but 255 or zero, then File Menu II assumes that the file has been stored in listed form. To get around problems this may cause, the program uses Return Key mode to erase itself before entering and running the file.

Type in Program I and save it. If you have any problems with the characters in lines 2220, 3010, 3020 and 3090, leave those lines out and save Program I to disc. Type NEW and type in Program II. Save and then RUN it. It will create a file called LINES.LST.

Type NEW and load Program I. Now type:

ENTER "D:LINES.LST"

and save the complete program to disc as MENU.BAS.

Now type in Program III which creates an AUTORUN.SYS file which will automatically run MENU.BAS when the disc is booted.

If you have any problems when typing in File Menu II, don't forget that all our listings can be checked using Get It Right!, or downloaded from MicroLink. ■

Program I

```
10 GOTO 470
20 INPUT #2;A$:B$=A$(11,13):IF A$(8,10
)="E S" THEN 100
30 IF B$="SYS" OR B$="DAT" OR B$="PT2"
 OR A$(3,6)="MENU" THEN 20
40 B$=A$(3):A$=B$:POSITION X2,A+3:? CH
R$(CH+A);" ";A$:Y2=Y2+1:RETURN
50 POKE 559,0:CLOSE #2:OPEN #2,6,0,"D:
*.*":FLAG=0
60 POKE 559,0:? "K    file menu ii▸▸▸▸
               by MARK COCKER
█":GOSUB 550
70 X2=2:Y2=2:CH=64:FOR A=1 TO 15:GOSUB
 20:NEXT A
80 X2=21:Y2=2:CH=79:FOR A=1 TO 12:GOSU
B 20:NEXT A:CH=37:FOR A=12 TO 15:GOSUB
 20:NEXT A:Y2=Y2-1
90 POSITION 7,22:? "SPACE BAR to page
forward":FLAG=1:GOTO 110
100 POP :IF FLAG=1 THEN POSITION 6,22:
? "SPACE BAR for previous menu":FLAG=2
110 POSITION 11,21:? "PLEASE MAKE CHOI
CE"
120 X=0:Y=4:GOSUB 180:POKE 559,46:POKE
 54286,192:POKE 764,255
130 A=STICK(0):IF A=13 OR PEEK(53279)=
5 THEN S=1:GOSUB 180
140 IF A=14 OR PEEK(53279)=3 THEN S=2:
GOSUB 180
150 IF STRIG(0)=0 OR PEEK(53279)=6 OR
PEEK(764)=12 THEN 300
160 IF PEEK(764)<>255 THEN GOSUB 240
170 GOTO 130
180 Y1=Y:Y=Y+(S=1)-(S=2):POKE 53279,0
190 IF Y<4 AND X=0 THEN X=X2-2:Y=Y2+1
200 IF Y<4 AND X=19 THEN X=0:Y=18
210 IF Y>18 AND X=0 THEN X=X2-2:Y=4
220 IF Y>Y2+1 AND X=X2-2 THEN X=0:Y=4
230 A=USR(M,0,PMB,PMD,59+76*(X=19),38+
(Y-4)*4,2):RETURN
240 GET #1,A:IF A=32 AND FLAG=1 THEN 6
0
250 IF A=32 OR A=27 THEN 50
260 IF A>64 AND A<80 THEN X=0:Y=A-61:G
OTO 300
270 IF A>79 AND A<91 THEN X=19:Y=A-76:
GOTO 300
280 IF A>48 AND A<53 THEN X=19:Y=A-34:
GOTO 300
290 GOTO 130
300 B$="                 "
310 FOR A=X+1 TO X+12:LOCATE A+3,Y,Z:B
$(A-X,A-X)=CHR$(Z):NEXT A:IF B$(1,1)="
 " THEN 130
320 POKE 559,0:A$="D1:":A$(4)=B$:B$=A$
(12,14):IF A$(12,12)=" " THEN 350
330 A$(12,12)=" ":FOR A=2 TO 13:IF A$(
A,A)=" " THEN A$(A,A)=".":A$(A+1)=B$:P
OP :GOTO 350
340 NEXT A
350 GRAPHICS 0:GOSUB 550:POKE 709,14:P
OKE 710,130:POKE 53248,0:POSITION 13,1
0:? A$:POSITION 13,8
360 ? "now loading...";:OPEN #3,4,0.A$
:GET #3,A:GET #3,B:IF A=0 AND B=0 THEN
 RUN A$
370 IF A=255 AND B=255 THEN 410
380 IF A<47 OR A>58 THEN RUN
```

```
390 ? "(ENTERING)":POSITION 0,15:? "NE
W":? :? :? "ENTER";CHR$(34);A$:? :? :?
 "GR.0:POKE 842,12:RUN"
400 POSITION 0,13:POKE 842,13:STOP
410 ? "(BINARY)":? "↓↓↓▸TURN OFF BASIC
? (XL/XE)";:GET #1,A:CLOSE #2:CLOSE #3
:? "[illegible]":POSITION 27,9
420 CLOSE #1:OPEN #1,4,0,A$:IF A<>78 T
HEN ? "(BASIC OFF)";:GOTO 460
430 IF A<>78 THEN ? "(BASIC OFF)";:GOT
O 160
440 ? "(BASIC ON)";
450 X=USR(5576):RUN
460 X=USR(ADR("h[illegible]ji [illegible]jL[illegible]")):RUN

470 GRAPHICS 0:POKE 559,0:GOSUB 550:DI
M A$(100),B$(56):DL=PEEK(560)+256*PEEK
(561):OPEN #1,4,0,"K"
480 A=ADR("H[illegible]/h[illegible]h
```



```
e/h[illegible]
[illegible]/H[illegible]")
490 X=USR(ADR("hh[illegible]
[illegible]"),A,
1664,100):X=USR(1693)
500 FOR N=DL+7 TO DL+27:POKE N,130:NEX
T N:POKE DL+3,70:POKE DL+6,6
510 POKE 712,6:POKE 710,2:POKE 709,123
:POKE 704,204:POKE 752,1:POKE 82,0:POK
E 512,128:POKE 513,6:POKE 53277,3
520 M=ADR("[illegible]hhh[illegible]
[illegible]
[illegible]")
530 PMB=INT((PEEK(145)+3)/4)*4:POKE 54
279,PMB:PMB=PMB*256:PMD=ADR("00"):GOTO
 50
540 GRAPHICS 0:GOSUB 550:POKE 53248,0:
POSITION 10,10:? "[illegible]ERROR #";PEEK(195);
" (HIT RETURN)";:GET #1,K:RUN
550 POKE 16,64:POKE 53774,64:TRAP 540:
RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	1635	20	8232	30	10199
40	11537	50	7974	60	30306
70	8255	80	17017	90	12998
100	15840	110	7087	120	10082
130	9870	140	7836	150	9467
160	5626	170	1617	180	6021
190	6320	200	5547	210	5928
220	6011	230	9015	240	6212
250	4009	260	7310	270	7504
280	7475	290	1617	300	2136
310	14793	320	10371	330	13949
340	1329	350	16780	360	14871
370	4309	380	4702	390	16437
400	5763	410	16895	420	11053
430	6711	440	2479	450	3159
460	9772	470	15926	480	25710
490	34229	500	11415	510	18201
520	46346	530	13306	540	19254
550	7721				

Program II

```
0 REM *** LINE MAKER FOR LINES    ***
1 REM *** 460, 480, 490, 520      ***
2 REM *** FOR FILE MENU II        ***
3 REM *** by Mark Cocker          ***
10 GRAPHICS 18:POKE 559,0:DIM A$(368),
B$(1):TRAP 60
20 FOR A=1 TO 40:READ C:IF C>255 THEN
40
30 D=D+1:A$(D)=CHR$(C):TOTAL=TOTAL+C:N
EXT A
40 POP :IF C<>TOTAL THEN ? "[illegible]ERROR IN
LINE":LIST PEEK(183)+256*PEEK(184):END

50 TOTAL=0:GOTO 20
60 IF C<>3327 AND PEEK(195)=6 THEN ? "
[illegible]ERROR #";PEEK(195):END
70 ? "INSERT DISK TO WRITE 'D:LINES.LS
T'";:INPUT B$
80 OPEN #1,8,0,"D:LINES.LST":? #1;A$(1
,360):CLOSE #1:? "[illegible]COMPLETE":END
100 DATA 52,54,48,32,88,61,85,83,82,40
,65,68,82,40,34,104,169,255,141,1,211,
24,165,106,105,32,133,106,76,2542
110 DATA 200,21,34,41,41,58,82,85,78,3
2,155,52,56,48,32,65,61,65,68,82,40,34
,72,138,72,174,156,6,189,176,2413
120 DATA 6,141,10,212,141,24,208,189,2
00,6,141,23,208,238,156,6,104,170,104,
64,6,104,169,7,160,168,162,6,3133
130 DATA 32,92,228,96,169,1,141,156,6,
76,98,228,2,6,128,130,128,130,128,130,
128,130,128,130,128,130,128,130,3137
140 DATA 128,130,128,6,1,4,4,2,12,12,1
2,12,12,12,12,12,12,12,12,12,12,12,12,
12,12,12,12,12,14,10,34,41,155,897
150 DATA 52,57,48,32,88,61,85,83,82,40
,65,68,82,40,34,104,104,133,204,104,13
3,203,104,133,206,104,133,205,2787
160 DATA 104,133,208,104,133,207,160.0
,166,208,240,14,177,203.145,205,136,20
8,249,230,204,230,206,202,208,4280
170 DATA 242,164,207,240,12,136,177,20
3,145,205,136,208,249,177,203,145,205,
96,34,41,44,65,44,49,54,54,52,44,3631
180 DATA 49,48,48,41,58,88,61,85,83,82
,40,49,54,57,51,41,155,53,50,48,32,77,
61,65,68,82,40,34,216,104,104,2124
190 DATA 104,133,213,104,24,105,2,133,
206,104,133,205,104,133,204,104,133,20
3,104,104,133,208,104,104,133,3237
200 DATA 209,104,104,24,101,209,133,20
7,166,213,240,16,165,205,24,105,128,13
3,205,165,206,105,0,133,206,3506
210 DATA 202,208,240,160,0,162,0,196,2
09,144,19,196,207,176,15,132,212,138,1
68,177,203,164,212,145,205,232,4122
220 DATA 169,0,240,4,169,0,145,205,200
,192,128,208,224,166,213,165,208,157,0
,208,96,34,41,155,3327
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
0	6012	1	4673	2	5641
3	6457	10	8433	20	6429
30	7505	40	14541	50	2937
60	10877	70	9483	80	12907
100	15896	110	15907	120	15860
130	16308	140	15601	150	15936
160	15834	170	16602	180	16012
190	15728	200	15733	210	16037
220	14384				

Program III: AUTORUN.SYS File creator.

```
0 REM *** AUTORUN.SYS MAKER       ***
1 REM *** by MARK COCKER          ***
2 REM *** (put any FILENAME.EXT   ***
3 REM ***  in FN$ - LINE 30)      ***
4 REM
10 GRAPHICS 0:TRAP 80:OPEN #1,8,0,"D:A
UTORUN.SYS"
20 DIM FN$(15),A$(18)
30 FN$="D:MENU.BAS":A$="RUN
    ":REM 15 SPACES
40 A$(4,4)=CHR$(34):A$(5,LEN(FN$)+4)=F
N$
50 FOR A=1 TO 125:READ B:PUT #1,B:NEXT
 A
60 FOR A=18 TO 1 STEP -1:PUT #1,ASC(A$
(A)):NEXT A
70 CLOSE #1:? "[illegible]COMPLETE":END
80 ? "[illegible]ERROR #";PEEK(195):END
100 DATA 255,255,160,6,162,6,76,175
110 DATA 6,175,6,251,6,160,11,185
120 DATA 0,228,153,163,6,136,16,247
130 DATA 169,222,141,167,6,169,6,141
140 DATA 168,6,172,170,6,174,169,6
150 DATA 232,208,1,200,142,246,6,140
160 DATA 247,6,169,163,141,33,3,169
170 DATA 6,141,34,3,96,172,0,6
180 DATA 208,10,169,0,141,33,3,169
190 DATA 228,141,34,3,185,1,6,206
200 DATA 0,6,72,32,251,6,104,160
210 DATA 1,96,253,6,255,6,108,250
220 DATA 191,68,2,68,2,0,9,0
230 DATA 9,0,1,226,2,227,2,160
240 DATA 6,224,2,225,2,253,6,0
250 DATA 6,19,6,18,155
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
0	6165	1	5645	2	6684
3	5178	4	871	10	8801
20	2771	30	9128	40	5920
50	6790	60	7930	70	5758
80	5710	100	4852	110	4710
120	4875	130	4995	140	4813
150	4918	160	4882	170	4093
180	4739	190	4659	200	4417
210	4746	220	3900	230	4061
240	4065	250	3050		

Typing tutorial

ONE thing we get asked about time and time again is how to type in some of the special graphics characters in our listings. Here is a full list of ALL the special characters, along with their Ascii codes, and how to type them in.

Control and Shift, where indicated, should be held down as you press the key indicated. For example, Control-comma would be entered by holding down the Control button and pressing the comma key.

Where INV is indicated before a key sequence you should hit the inverse video key before pressing the keys. This is the Atari-logo key on older machines and the half-black/half-white key on the lower right of the XL or XE keyboard. Don't forget to press the inverse key again after you've typed your inverse characters in order to set it back to normal again.

Where we have indicated "Esc ..." you should press the Escape (or Esc) key before pressing the key combination. For example, Esc...Control-equals would mean press the Esc button, then hold down Control and press the equals key.

Don't forget that you will sometimes need to type in a line that is slightly longer than the normal three line maximum. To do this, simply type POKE 82,0 before you start entering your program in order to reset the margin to the very edge of the screen.

You can also use abbreviations with many commands to save space, usually taking the form of a couple of letters followed by a fullstop. ■

A guide to correctly typing in the special graphics characters in *Atari User* listings

Ascii code	Description
0	Control-comma
1	Control-A
2	Control-B
3	Control-C
4	Control-D
5	Control-E
6	Control-F
7	Control-G
8	Control-H
9	Control-I
10	Control-J
11	Control-K
12	Control-L
13	Control-M
14	Control-N
15	Control-O
16	Control-P
17	Control-Q
18	Control-R
19	Control-S
20	Control-T
21	Control-U
22	Control-V
23	Control-W
24	Control-X
25	Control-Y
26	Control-Z
27	Esc ... Esc
28	Esc ... Control-minus (Up)
29	Esc ... Control-equals (Down)
30	Esc ... Control-plus (Left)
31	Esc ... Control-asterisk (Right)
96	Control-fullstop
123	Control-semicolon
124	Shift-equals
125	Esc ... Shift-< (Clear)
126	Esc ... Control-backspace
127	Esc ... Control-Tab
128	INV Control-comma

Common Atari basic abbreviations

CL.	CLOSE	NO.	NOTE	ST.	STATUS	CS.	CSAVE
C.	COLOR	O.	OPEN	T.	TRAP	E.	ENTER
D.	DATA	PL.	PLOT	X.	XIO	L.	LIST
DR.	DRAWTO	P.	POINT			LO.	LOAD
GOS.	GOSUB	POS.	POSITION			S.	SAVE
G.	GOTO	?	PRINT				
GR.	GRAPHICS	.	REM				
I.	INPUT	RES.	RESTORE				
LOC.	LOCATE	RET.	RETURN				
LP.	LPRINT	SE.	SETCOLOR				
N.	NEXT	SO.	SOUND				

129	INV Control-A
130	INV Control-B
131	INV Control-C
132	INV Control-D
133	INV Control-E
134	INV Control-F
135	INV Control-G
136	INV Control-H
137	INV Control-I
138	INV Control-J
139	INV Control-K
140	INV Control-L
141	INV Control-M
142	INV Control-N
143	INV Control-O
144	INV Control-P
145	INV Control-Q
146	INV Control-R
147	INV Control-S
148	INV Control-T
149	INV Control-U
150	INV Control-V
151	INV Control-W
152	INV Control-X
153	INV Control-Y
154	INV Control-Z
156	Esc ... Shift-backspace
157	Esc ... Shift-> (Insert)
158	Esc ... Control-Tab
159	Esc ... Shift-Tab
224	INV Control-fullstop
251	Control-semicolon
252	INV Shift-equals
253	Esc ... Control-2 (Bell)
254	Esc ... Control-backspace
255	Esc ... Control-> (Insert)

GETTING DLIs TO DISGORGE COLOURS

I AM writing in utter desperation. I bought a copy of Graphics Art Department about two months ago and I cannot get to grips with the DLI option for the extra 128 colours.

The problem is that I start by using one colour register and one DLI, but if I then use a second DLI from the same colour register and then overlap the colour of the first DLI, it changes to the colour of the second DLI.

This causes problems when you are trying to create a number of different shades around the same area of the screen using one colour register.

Am I doing something wrong, or is it that you cannot use two or more DLIs from the same colour register on the same horizontal line? – **Philip Tackaberry, Clondalkin, Dublin.**

● The colour registers may only contain one value at a time, and a DLI allows you to change that value on consecutive lines of the display.

This means that each time you use a DLI the contents of that colour register will be changed until either the bottom of the screen is reached or another DLI changes it to yet another value.

So you can have four new colours on each new line, but you will lose the old ones.

If you write in machine code it is theoretically possible to "count" along the line after a DLI has taken place and change colours part way along, but the timing required is so critical that you would have to turn everything else (including the keyboard) off.

The more advanced assembler programmers might like to tackle this one.

Peculiar printing

I HAVE an Atari 800XL, Atariwriter, a Brother M1009 printer and a Xetec Graphics interface. I cannot get the printer to print in the normal 10cpi mode irrespective of the G setting in the word processor.

The printer either prints in the expanded or emphasized mode, depending on the printer choice made at the printer option stage.

This strange behaviour is only experienced when the graphics mode setting on the Xetec interface is set off.

With the graphics mode set to on, the printer works in the normal 10cpi mode, but prints all the control characters embedded in the text.

It is frustrating having dished out a lot of money for something which doesn't do the job for which it was bought. Can you help? – **J.T. Abebrese, London**

● This is an odd one. We have heard a couple of cases of the Xetec interface giving slightly unusual results, but we're not sure of the cure for this particular one. Perhaps a reader can help?

String along with 800XL

I OWN an Atari 800XL and recently have been learning about string handling at school.

None of the small programs that we use at school work correctly on my Atari. It doesn't seem to like direct input into a string.

Could you tell me what I'm doing wrong and if there any books which will explain how to use strings properly? – **Daren Teather, Bradford, W. Yorks.**

● Atari string handling is a little different to that on most machines.

The biggest difference is the lack of string arrays, as A$(5) does not mean the fifth string called A$, but rather the portion of A$ from character five onwards.

Also DIM A$(100) means reserve 100 characters for A$, not 100 full strings called A$.

You can input directly to a string with INPUT A$ or INPUT #1,A$.

If you want to input to a portion of a string – a substring – then you must input to a temporary work string first. For example:

```
INPUT #1,TEMP$ :
A$(5,10)=TEMP$
```

Help for adventurers

I WOULD like to thank you for a really brilliant magazine which I have bought since October 1985.

The only criticism I have is the lack of an adventure help page where readers could help each other with adventuring problems. – **Christopher Walker, Oldham, Lancs.**

● Brillig, our adventure columnist, has recently started his Lifeline, which should meet your needs. We have passed your Zork II problem to him.

Commands on keypad

I RECENTLY bought a 130XE and was interested in Len Golding's article in your October issue about building a new keypad.

The article states that new keys can be programmed to duplicate any key combinations. So is it possible to program each key with a Basic command such as RUN, LIST and so on? – **Peter Amos, Orpington, Kent.**

● Not with the program as listed, but by adding a few more bits of machine code there is no reason why it couldn't be done.

At present there is a vertical blank routine which simply dumps the single character you require into the keyboard character-press register at location 764.

You could extend this routine to make the vertical blank dump a new character every 50th of a second until the text is complete.

This would give Basic time to detect and read each character as it is placed into the register, not knowing that your vertical blank routine was typing them in rather than the user.

Let us know how you get on.

Looking into Logo

I OWN an Atari 800XL and have recently obtained an Atari Logo cartridge. With it came a booklet called Quick Reference Guide, but unfortunately it wasn't much help for a beginner like myself.

Can you tell me if the Atari Logo package should have included another manual or if other books are sold

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separately? – **Zaiffer Aavon, Israel.**

● Two fairly thick books that go with the Logo package used to be packed in a separate, smaller, box to the cartridge. They should have been included in the purchase price, so contact your dealer and find out where the books vanished to.

1029 printer facts

DO any of your readers who own the Atari 1029 printer have any useful programs or information for this machine? – **R.J. Sandercock, Haverfordwest, Dyfed.**

● Can anyone help Mr. Sandercock?

Bug in the Data Editor

REGARDING your Data Editor in the October issue of Atari User. I was very impressed by this useful program, but I have found a bug in the Load/Save routine which gives a memory full error when writing to disc.

The correct version of line 880 should be:

```
880 IF X1=LN THEN 940
```

— **Andrew Yates, Oswestry, Shropshire.**

● You are quite correct, but perhaps a better version still of line 880 would be:

```
880 IF NOT (X1=LN AND
    IO=4) THEN 940
```

Playfields poser

I HAVE been following Stephen Williamson's articles on Player Missile Graphics and was impressed by Computer Canvas II in the November issue.

However although I have the listing working correctly, have created playfields and have saved them to cassette, when I try to load them to screen I just get Error 2.

The created playfields will successfully reload into Computer Canvas, but I need to know how I can use them in my own programs. Could you help? – **P. Purchase, Truro, Cornwall.**

● You can't just use CLOAD or LOAD "D:PLAYF" to load a data file into Basic – these commands are reserved for programs only, and would throw out any non-standard format.

To reload a saved playfield simply modify the routine on lines 1640 to 1820 of the Computer Canvas II program.

Don't forget to initialise the string IO$ before you access it – see lines 50 and 1960-1980.

Game maker required

I AM stationed in Germany and therefore don't hear much about new releases until I receive Atari User every month. I have designed what I think is an original platform arcade game. However I do not have much knowledge of programming.

I have looked around Germany for a game maker style of program which would enable me to write the game myself, but to no avail. Is there such a program around? – **D. Gratton, W. Germany.**

● There are some game makers around, but they are not really suitable for the platform-type variety.

Your best bet would be to contact one of the games companies and work with some of their programmers.

Do make sure that you first get a deal which gives you some form of multi-machine royalty agreement on your idea.

Purpose of the port

WHAT is the extension port at the rear of my Atari 130XE used for? If it is for plug-in cartridges or peripherals could you tell me what is available and where they can be bought? – **Daniel Page, Enfield, Middlesex.**

● There are two connectors on the back of a 130XE, the cartridge socket and the expansion port.

On the old XL range the expansion port was larger, but when designing the XE Atari decided that since most of the lines on the expansion port were duplicates of those on the cartridge socket (the address and data lines were present on both) they would make a dual socket instead.

So far there has been little around to use this new expansion port – which is really an extension of the machine's parallel data bus – but there must be some companies working on such products.

If anyone out there knows of any, why not write in and let us know?

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Checksum revealed

AS a new reader of your magazine I am mystified by the checksum listing printed at the end of each program.

I should be most grateful if you could tell me where I can get the checksum program and its instructions. – **John Gweeney, Kinross, Tayside.**

* * *

I BROUGHT Atari User for the first time last November and I find it a very interesting magazine particularly the five-liners, listings and the Mailbag.

I have seen your Get It Right! checksum program mentioned in various parts of the magazine. What is Get It Right! and how can I get a copy? – **Rghm Toebes, Lichtenvoode, Gelderland, Netherlands.**

● The instructions and listing for our Get It Right! checksum program last appeared in the August 1986 *Atari User.*

You can order a copy using the form at the back of this issue. If you don't fancy typing in the listing, you can order a copy of the August monthly disc which carries a copy of Get It Right!

Special offer Ninja

IN your November 1986 issue you mentioned a special offer whereby I could order a game called Ninja for only 99p, but when I looked at the order form I found that the price was £12.99.

Could you tell me how I

can buy Ninja for 99p? – **A.J. Quixley, Huyton, Merseyside.**

● Every month we make special offers for those of you who wish to take out subscriptions to *Atari User*.

If you buy the special offer at the same time as taking a subscription you can get it at the specially reduced price. You cannot buy the special offer on its own.

A subscription offers especially good value when you take into account the fact that you receive a pristine copy every month only a day or two after we ourselves receive them from the printers.

Using the XEP-80

I WOULD like to know more about the XEP-80 column chip mentioned in the November issue of Atari User.

Can it be used with AtariWriter to get 80 columns in create and edit modes? – **Ian Goodwin, Wrexham, Clwyd.**

● The XEP-80 is not a chip but a separate module which plugs into your computer's second joystick port.

It can't be used with AtariWriter at present, but by the time the product is released there will also be an updated version of AtariWriter called AtariWriter 80 which will support full 80 column use. See last month's issue for an in-depth review.

Downloading listings

I USE my Atari 800XL, MultiViewterm software and a Miracle Technology WS4000 modem to access MicroLink and Prestel.

My problem is that I don't know how to download any of the listings mentioned in Atari User. Can you help? – **Tony Parry.**

● Well, there is a small problem with MultiViewterm which makes this job rather difficult.

All decent terminal programs have what is known as a capture buffer, which allows you to store the text you receive from the host computer in memory.

In many cases this text will be too long to keep intact in Ram, so a download option is provided which allows the computer to spool it out to disc every time the buffer is almost full.

Unfortunately, MultiViewterm does not do this properly with text files, so what you must do is save the blocks manually.

To do this, select the download option on MicroLink and turn your Viewterm buffer on just before you press the final Return key to tell MicroLink to send.

When the buffer is almost full (the letters BUF disappear to show you the space left) you must press Control-S to stop the computer sending, then go back to the Viewterm menu and save the buffer contents to disc as FILE1.

Then go back online and press Control-Q which will start the computer sending again. Keep on doing this until the download is finished, saving each segment as FILE2, FILE3, and so on.

Then you must boot up your DOS menu disc and append the files together. Append is a special form of the copy function which adds the new file onto the end of an existing one. So, you would type:

C <Return>
FILE2,FILE1/A <Return>

then:

C <Return>
FILE3,FILE1/A <Return>

and so on until you have added all the files on to the end of FILE1. The /A tells DOS to use the append option. FILE1 is then your downloaded program.

If MultiViewterm had a text download option none of this would be neccessary, so a phone call or two to Miracle might help hurry them into producing a new version.

Protection problem

I OWN an American 130XE and an Indus disc drive. I have found your magazine extremely informative and have recently subscribed, taking advantage of your Mercenary 2nd City offer.

The package arrived promptly, but to my dismay I am unable to load Mercenary.

Upon booting I get four beeps from the Indus and the track counter stays at 00. The drive then spins until the computer is switched off. I have numerous other games and have never had any other problems. Can you give a solution? – **M. Thompson, Overton, Hants.**

● The problem almost certainly involves the NTSC computer which won't read the protection tracks on the disc correctly so the program reacts as it would to a pirated version.

Try contacting Novagen, publishers of the product, and see if they have any suggestions as to a way round your problems.

Missing manuals

EXACTLY 12 months ago, while I was on leave from the forces in Germany, I bought an Atari 800XL and disc drive from Dixons in Slough.

On return to Germany I unpacked the various boxes to find that the disc drive users guide, Basic manual and DOS disc were all missing. I wrote to Dixons and never received a reply to my letters.

I tried contacting Atari UK and Dixons again, but with absolutely no luck. Could you help in this matter as my enthusiasm for ever receiving the missing vital items is diminishing fast.

Also, could you tell me whether Adventure International has gone into liquidation? – **S. Day, Preston, Lancs.**

● Try contacting Atari Germany: Atari (Germany), Frankfurther Street 89-91, 6096 Raunheim, Germany. Tel: (010) 496 142 41081.

Adventure International has indeed folded. The firm was caught up in the shock end to the computer boom a couple of years ago and never really recovered.

Rumour has it that Scott Adams has formed another company so that he can continue to produce adventure games for Marvel comics in conjunction with the Questprobe series.

Looking for Asteroids

COULD you please tell me where I might be able to buy Asteroids for my son's 800XL? My local shop has tried for a week and has not found it. – **Mrs. E. Madelin, Bracknell, Berks.**

* * *

DO you know of any Basic compilers which will enable me to write machine code speed programs without the brainache?

Also could you review some of the games which were available before Atari User started, so that new owners can find out which titles are worth buying? – **David Hicklin, Derby.**

● To find out about the best of the old games look no further than our Games Old and New article in the December issue.

You should be able to find an old copy of Asteroids if you try some of the larger

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mail order companies, but if they want more than £1.99 for it, forget it! It's not exactly the best game ever to be released.

Books on machine code

I OWN an Atari 800XL and would very much like to learn how to program in machine code.

Do you know of any good books which are for beginners and are tailored for the Atari? – **Nick Miller, Rugby, Warwickshire.**

● A number of good machine code books are available for the Atari, the best of which is probably from Compute! – Machine Code for Beginners at £17.95.

There is also a good book called the A B and C of Machine Code, and numerous others.

If you plan to start writing in machine code you will also need an assembler, the best of which is Mac/65 from OSS, but this is rather expensive.

You may prefer to start out with the rather slower and less powerful Atari Assembler/Editor cartridge.

Also try to get hold of a copy of an excellent book called Mapping the Atari (from Compute! again) which you'll quickly find will be worth its weight in gold.

YOUR HINTS AND TIPS

KICKSTART

WHILE messing around on Kickstart by Mastertronic I found an amazing little trick.

When you hear the starting tone, waggle the joystick (as in Decathlon) as fast as you can. Then you will start at the top speed and you will knock off at least two seconds from your time. – **Owen Stride, Dereham, Norfolk.**

BOUNTY BOB STRIKES BACK

Level 1: Take the flower pot and press 1 and Start.
Level 2: Take the paint roller (after killing the aliens) and press 1 and Start.
Level 5: Take the coffee pot and press 8 and Start.
Level 10: Take a pitch fork and press 5 and Start.
Level 16: Set the suction tube number 1 to left, take pie and press 9 and Start.
– **M. Jones, Wirral, Merseyside.**

STARQUAKE

THE names of the transporters are Traid, Kernx, Whole, Minim, Salco, Cosec, Artic, Quark, Argon, Delta, Crash, Z.A.P., Penta, Atari and Secon.

To get 100 lives hold down the pause keys (Shift+P) after you have lost your last life. Keep them down and move the joystick down.

You will be moving very slowly and the creatures will move fast. Get yourself killed, but still keep pressing the pause keys. The reading will say 00, but you will have 100 lives. – **Mike Moulton, Castle Hedingham, Halstead, Essex.**

AIRWOLF

FOR some extra points, when the game starts, keep firing. – **Mr M. Jones, Wirral, Merseyside.**

ORIGINAL TIPS

MAY I congratulate you on a brilliant magazine. After the first few issues I thought it was just another "five minute" magazine, but over the months you have got a lot better – Player missile graphics, gadgets, enhanced reviews, I love it!

I hate pirates, and I have a lot of software which cost me a lot of money and I am proud of it, so the games tips I am going to give are from my originals, not copies.

Here are the first eight passwords for One Man and his Droid . . .

Level	*Password*
1	*Press START!*
2	*BUBBLE*
3	*ATARI*
4	*FINDERS*
5	*GENETIC*
6	*ZAPPED*
7	*MEGASONIC*
8	*TIME WARP*

And here are the codes for Ollies Follies (Americana). To start at level 5, type FANDA while playing: For level 10, type FRANK, for level 15, type NORBI and for level 20, type ZOOM (3 noughts).

Why don't you devote a page or so to hints and tips on games? I could send in tips, and how about a high score table? I have completed Mercenary in three months, and got 1,109,000 credits! – **Colin Raynor, Cadbury, Devon.**

Brighter headlines

I RECENTLY bought an Atari 800XL, 1050 disc drive and 1029 printer. I was wondering if there is a desktop publishing program, along the lines of Newsdesk on the Commodore 64, which would allow the use of different fonts, headlines and even illustrations on my 1029?

I am also a bit confused over the different versions of Dos available.

The paint program which came with my computer will not save pictures on discs formatted with Dos 3, yet has no facility for formatting a disc itself.

I did try formatting a disc with Home Filing Manager, but saving a picture on to this produced a "No Room On Disc" error.

I also tried converting it to Dos 3 with the utility on the master disc but this too was unsuccessful.

I have seen advertisements for a Dos 4, but your reply to Mr R Powell recommends Dos 2.5!

All very confusing, you must agree. Which Dos should I use and where can I obtain it? A rough idea of price would also be appreciated.

Ronald McAvoy, Maryport, Cumbria.

● Firstly, Software Express should be able to help you out with some packages from XLent Software which might ease your typesetting problems.

As far as Dos goes, Dos 2.5 is the current standard. Dos 3 was brought out by Atari but proved rather inefficient and never took off.

Dos 4 is not an official Atari system, though it might have been commissioned for such use some time ago.

Stick with Dos 2.5, and use Dos 3 only if you have to.

You should be able to pick up a copy of Dos 2.5 for the price of a blank disc from most Atari dealers, and the manual comes as an AtariWriter text file on the disc.

Using page zero

I AM becoming increasingly interested in machine code programming for my Atari 800XL and have bought two books on 6502 programming.

My problem is that both

books state that page zero will always be available on any computer for zero page instructions and variable storage.

However I also have a memory map of the Atari and it shows clearly that page zero is used by the operating system and Basic.

Could you please tell me if it is possible to use page zero, and if so which locations are available.

If not, is there any other way around this problem? – **S. Townend, Goole, North Humberside.**

● Page zero is indeed available on any computer, assuming you have full control of the 6502.

However the Operating System and Basic are both very complex machine code programs themselves, and as such need their fair share of zero page locations.

In the case of the Atari, $00-$1F are used by the OS; $20-$3F by CIO but are otherwise free; $40-$7F by the display handler and should not be touched; $80-$CA by Basic, but are free if you are not calling your machine code from Basic.

$CB-$D1 are free for you to use; $D2 and $D3 are reserved for cartridge use; $D4-$FF are used by the floating point routine, and are completely free if you don't plan on calling the FP package from your machine code.

On the whole, unless you KNOW an area to be free, don't use it, the best idea being to stick to using $CB-$D1 which you should never have any trouble with.

Elusive stripper

PLEASE can you tell me where I can get the following games for my computer (800XL). Ghosts 'n' Goblins by Elite, Cluedo and Sam Fox Strip Poker.

I have been looking for ages. I have seen the games but not for the Atari. – **Jason Sweby, Plymouth, Devon.**

XIO commands

WOULD it be possible for you to do a series on the undocumented XIO commands? – **S.K. Stupple, Mansfield, Notts.**

* * *

I WAS interested to read in the November issue of Atari User that it is possible to emulate certain DOS functions using the XIO command.

I have several books on Atari Basic, but they only deal with the XIO function to fill in blocks of colour. Would it be possible to do an article on this subject? — **Peter Sendonarts, South Tottenham, London.**

● In last month's issue we started a series on using the I/O facilities of the 8 bit Atari, and XIO is one of the areas which will be fully covered over the next few months.

The command is very powerful indeed, but would take up too much space to describe it in full in the space we have here. Stay tuned, as they say.

Phantom beeb blower

I OWN an Atari 800XL with dual operating system, a 1050 disc drive with a Hyperdrive, a 1010 tape recorder and a 1029 printer.

This computer set is just perfect for me and I like it. I'd like to explain a few things about this before going on about my problem.

I got Mr G. Paul's Dual Operating System in December 1985 and with a flick of a switch I have a built in translator. I found this very useful as it saves a lot of loading time.

My Hyperdrive also saves me a lot of time because it is twice as fast as normal 1050 disc drives.

I had a problem in fitting these chips in, but my electronics teacher at school did it very well and everything works better than before – congratulations to Mr J.L. Birkett at Aldenham School, Elstree.

Anyway, my problem I think, is something to do with my Dos system. When I turn my computer on it beeps, although I'm not pressing start. It only happens a few times but I want to know how I can get rid of it. Have any readers with Mr G. Paul's Dos got the same problem? If so, then please contact me. – **Takeshi Ishikawa, Stanmore, Middlesex.**

● The most likely reason that your computer beeps when you switch on is that the contacts on the Start button are sticking. Drop it into your local dealer to have it checked.

It is unlikely that the new chip has caused this to happen, but taking the computer apart may have caused the contacts to move.

Pen pals round the world

THESE foreign Atari User *readers would like English pen pals:*

Horacio Daniel Stolovitzky Culpina 146 3A (1406) Buenos Aires Argentina.

Bart Trommelen Hakvoortseweg 8 5081HA Hilverenbeek Holland.

The Atari Users Club 20—473 Lublin 49 PO Box 21 Poland.

J.F. Gelswyck, Pemmef/ Royal Commison PO Box 30078 Jaubu Al-Sinauyah Saudi Arabia.

Max Terveen Textiel Botermarkt 9 Leiden Magerhorst 8 Alphen A/D Rijn Geiden, Netherlands.

(He can supply help to anyone having problems with a General Electric TXP-1000 printer and is especially interested in Forth and Pascal.)

HELP!

MORDEN'S QUEST

HOW do I get past the pigmy and the carnivorous plant? – **Daniel Nye, Bury St. Edmunds, Suffolk.**

HOW do I use the transporter? – **Owen Stride, Dereham, Norfolk.**

SPELLBOUND

HOW do I get past the gas room? How do I move the lift? How do I get over the wall? – **A Hughes, St Ives, Cornwall.**

Centronics interface

THERE is a gismo on the market which costs £24.95 and allows you to connect Centronics printers to your Atari 8 bit.

How about doing a review of it so that we can see if it's as good as it sounds? – **D.W. May, Chester.**

● Look out for an upcoming part of our Gadget series which will show you how to build such an interface for yourself.



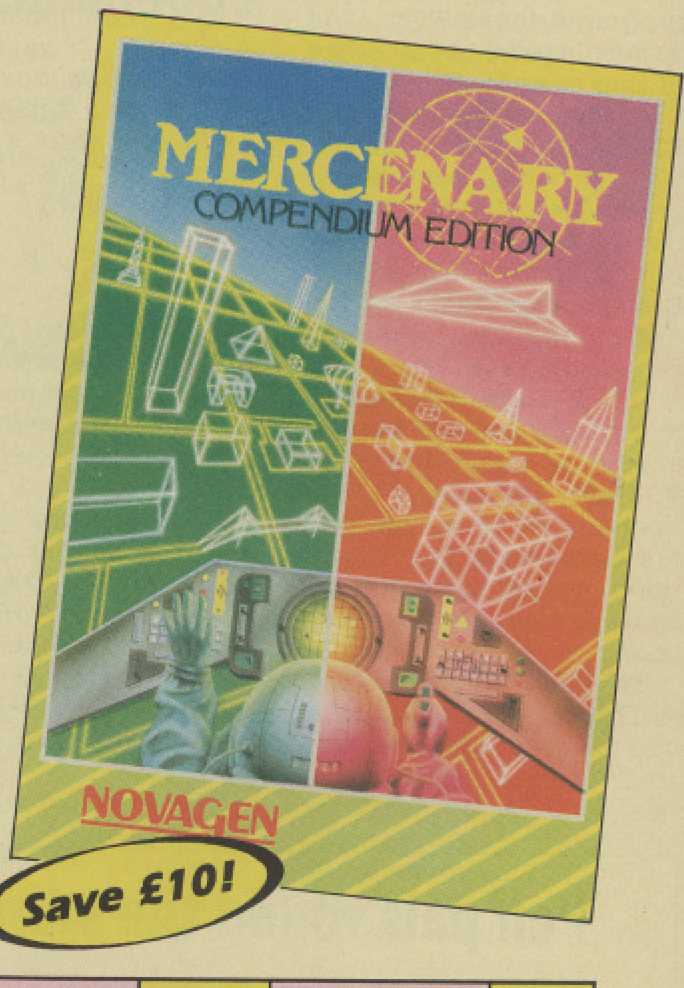
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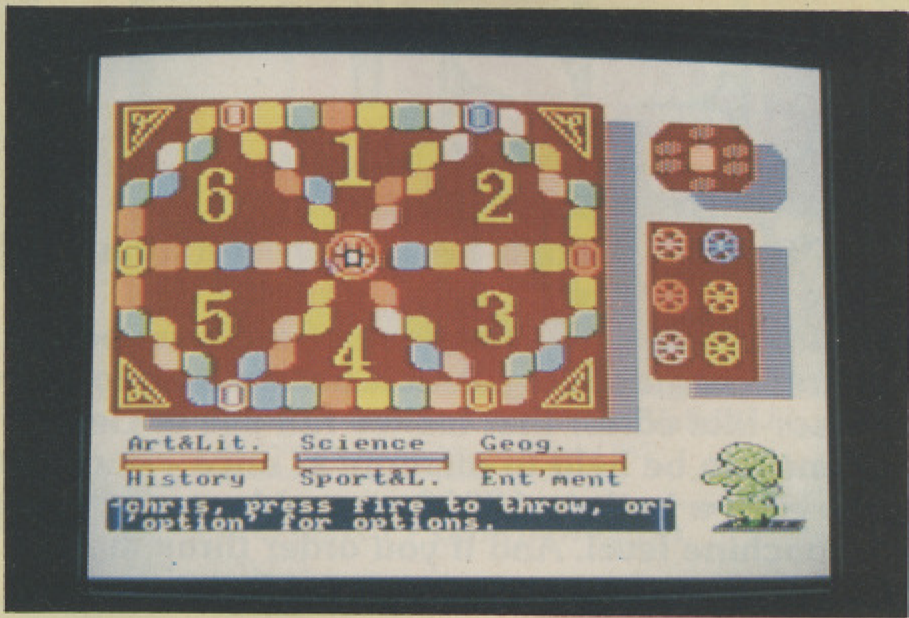
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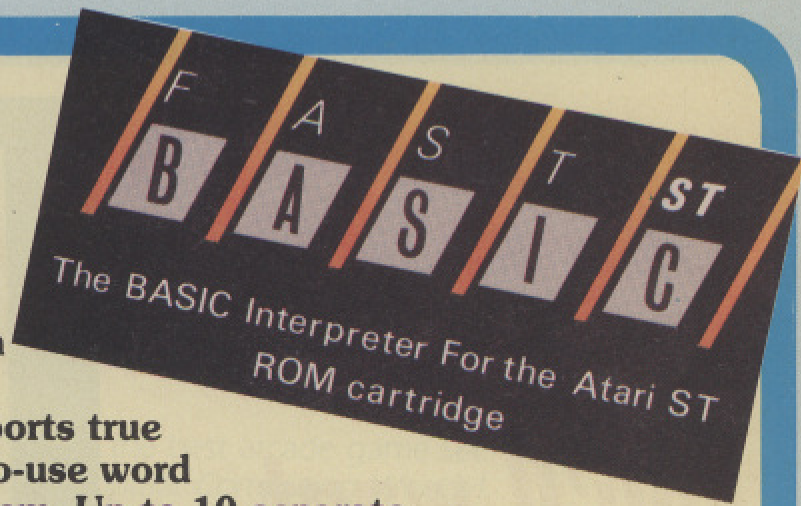
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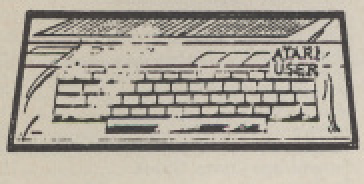
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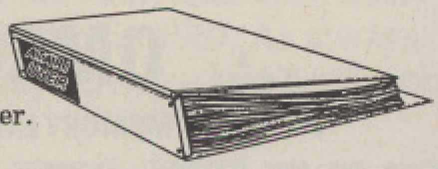


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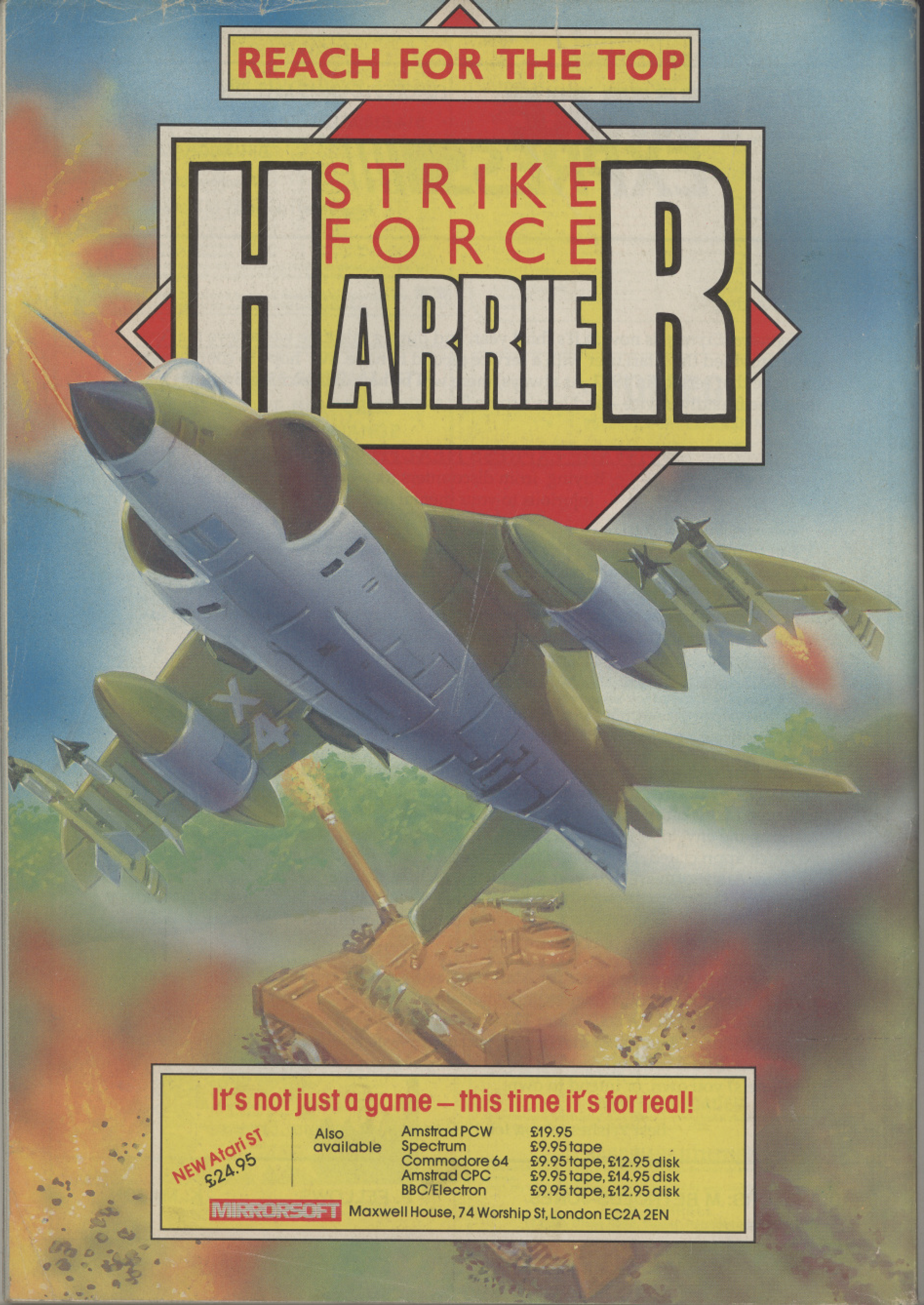
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